

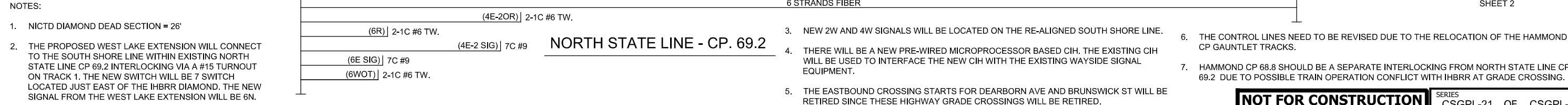


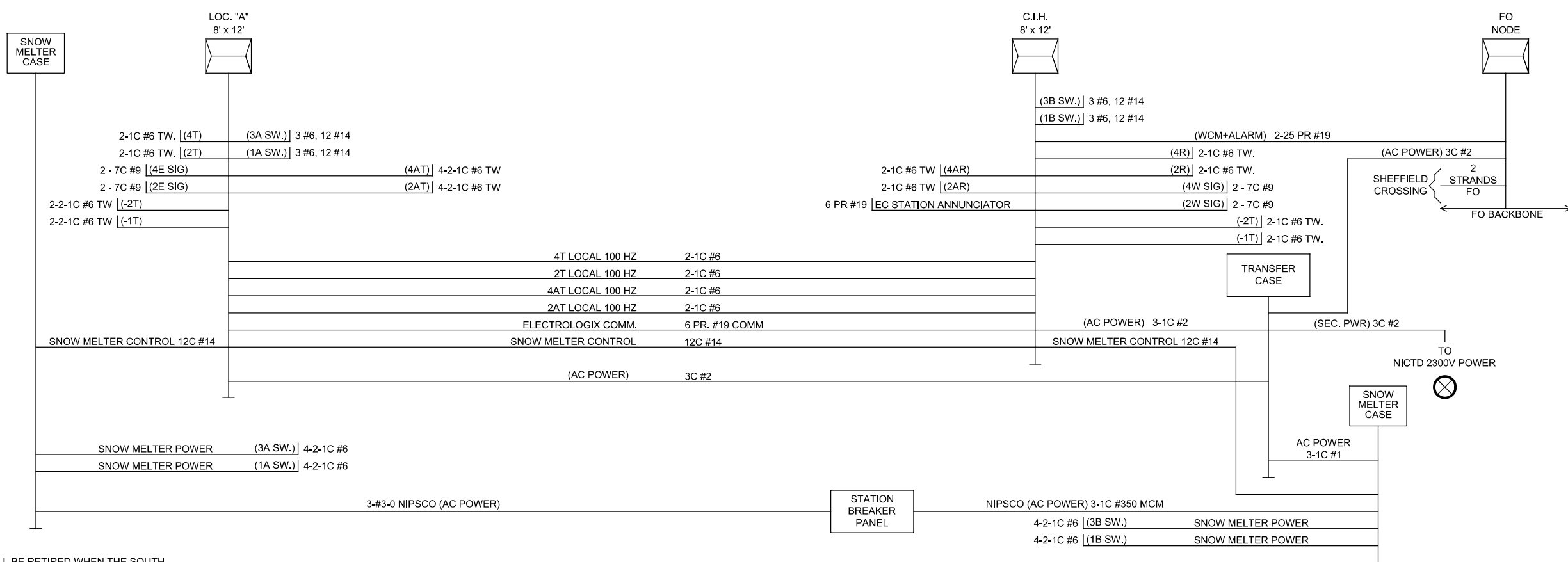
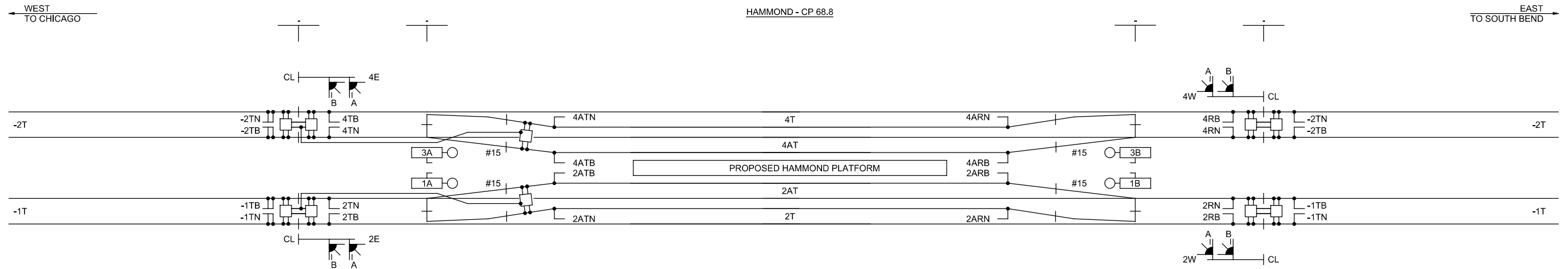
Appendix E. Engineering Drawings

(Part 7 of 10)



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- NOTES:
- EXISTING HAMMOND CP 68.5 GAUNTLET TRACKS WILL BE RETIRED WHEN THE SOUTH SHORE LINE IS RE-ALIGNED.
 - PROPOSED HAMMOND CP 68.8 GAUNTLET TRACKS WILL BE A NEW INTERLOCKING LOCATED ON THE RE-ALIGNED SOUTH SHORE LINE JUST EAST OF EXISTING NORTH STATE LINE CP 69.2.
 - HAMMOND CP 68.8 SHOULD BE A SEPARATE INTERLOCKING FROM NORTH STATE LINE CP 69.2 DUE TO POSSIBLE TRAIN OPERATION CONFLICT WITH IHBRR AT GRADE CROSSING.
 - PROPOSED SHEFFIELD HIGHWAY GRADE CROSSING WILL BE WITHIN HAMMOND CP 68.8 INTERLOCKING LIMITS.

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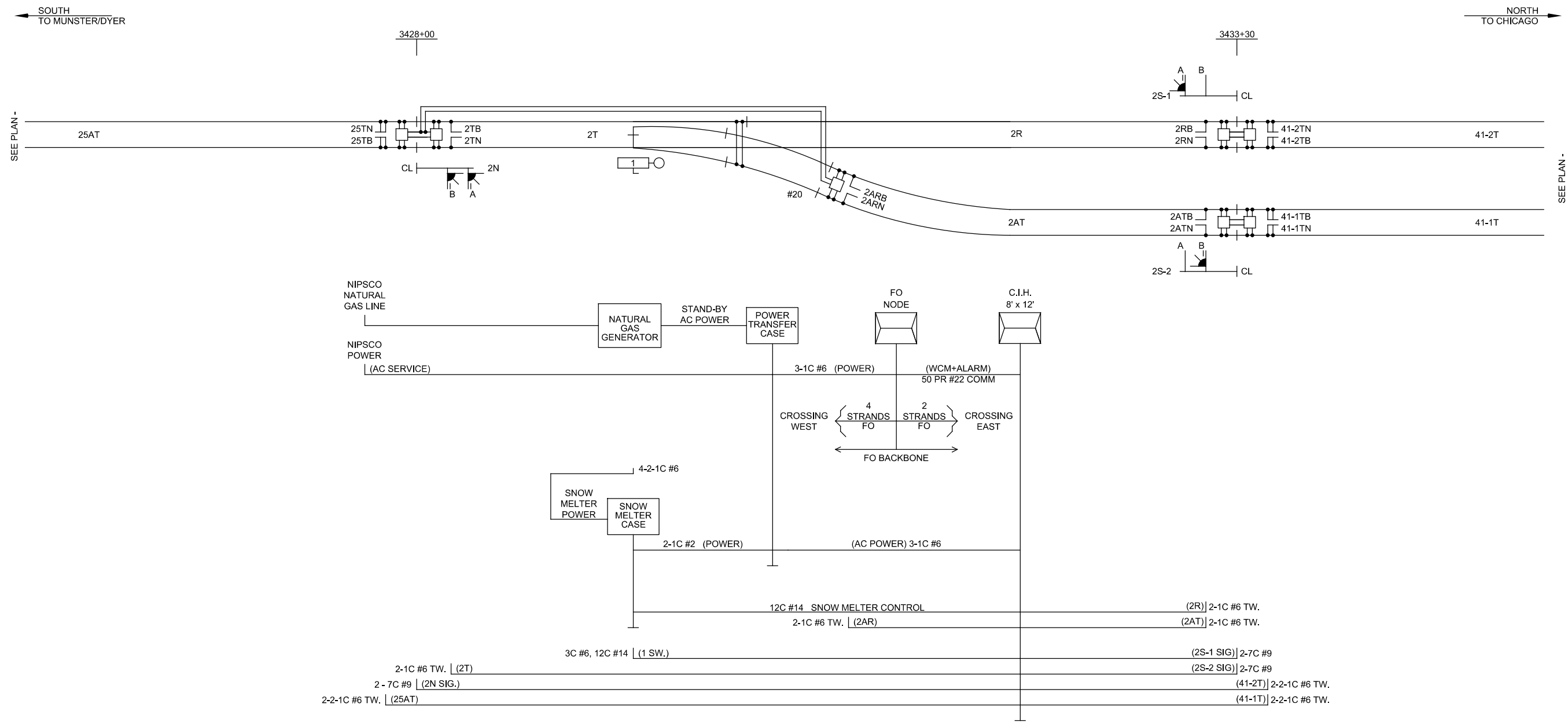
SERIES CSGPL-22 OF CSGPL-35

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK

HAMMOND CP 68.8 LOCATION PLAN SYSTEM

FILENAME	SHT_WL_CSIG_PLN_727	SHEET
SCALE	AS NOTED	130 OF 248

CP 64.9



- NOTES:
1. FOULING WIRES TO BE 500MCM.
 2. THERE ARE FIVE CONTROL POINTS ON THE WEST LAKE EXTENSION. THEY ARE ALL END OF SIDING INTERLOCKINGS. THIS IS A TYPICAL DRAWING FOR ALL FIVE CONTROL POINTS.

NOT FOR CONSTRUCTION

SERIES
CSGPL-23 OF CSGPL-35

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

CP 64.9 END OF SIDING LOC PLAN
SYSTEM

FILENAME
SHT_WL_CSIG_PLN_728

SCALE
AS NOTED

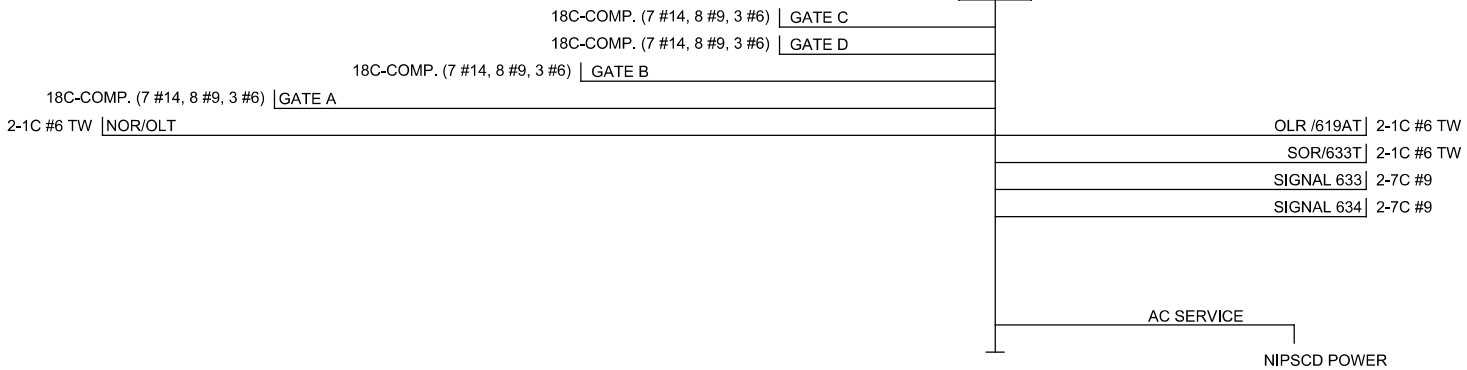
SHEET
131 OF 248



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1. FISHER STREET IS A QUIET ZONE CROSSING. INSTALL A 100' MEDIAN IN THE ROAD ON BOTH SIDES OF THE TRACKS MEASURED FROM THE CROSSING GATE. THE MEDIAN ON THE EAST SIDE OF TRACK SHALL HAVE AN OPENING AT THE SHARED USE PATH. INSTALL A BOLLARD IN THE SHARED USE PATH AT THE MEDIAN OPENING.
2. AUDIO FREQUENCY OVERLAY (AFO) TRACK CIRCUITS ARE USED FOR TRAIN DETECTION AND ACTUATION OF THIS RAIL-HIGHWAY GRADE CROSSING. CONTRACTOR SHALL DESIGN AN AFO ASSIGNMENT PLAN TO GIVE 20 SECONDS MINIMUM WARNING TIME PRIOR TO THE ARRIVAL OF TRAIN AT THIS CROSSING. 790 HZ PHASE SHIFT OVERLAY IS NOT COMPATIBLE 156 HZ ELECTROCODE (5TH ORDER HARMONIC).

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

FISHER ST HWY GRADE CROSSING SYSTEM

FILENAME	SHT_WL_CSIG_PLN_729	SHEET 132 OF 248
SCALE	AS NOTED	

ISSUE	DATE	DESCRIPTION

SOUTH
TO MUNSTER/DYER

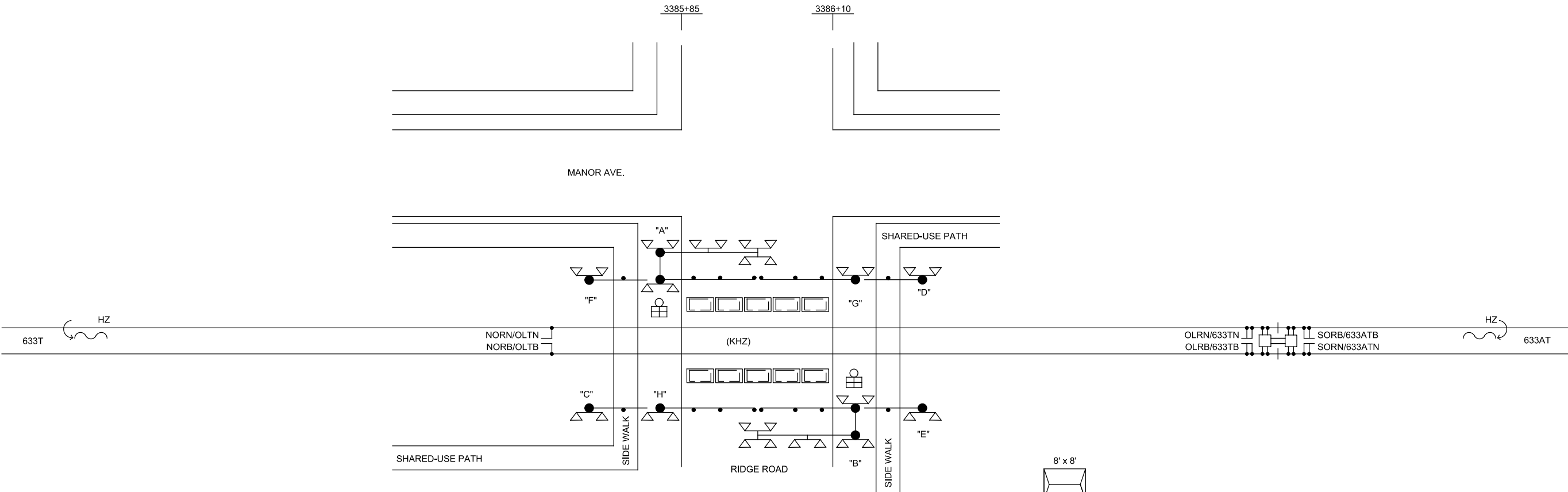
NORTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT RIDGE ROAD - 3477'
30 SECONDS AT 79 MILES PER HOUR

MINIMUM LENGTH OF ISLAND CIRCUIT 120 FEET

SOUTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT RIDGE ROAD - 3321'
29 SECONDS AT 79 MILES PER HOUR

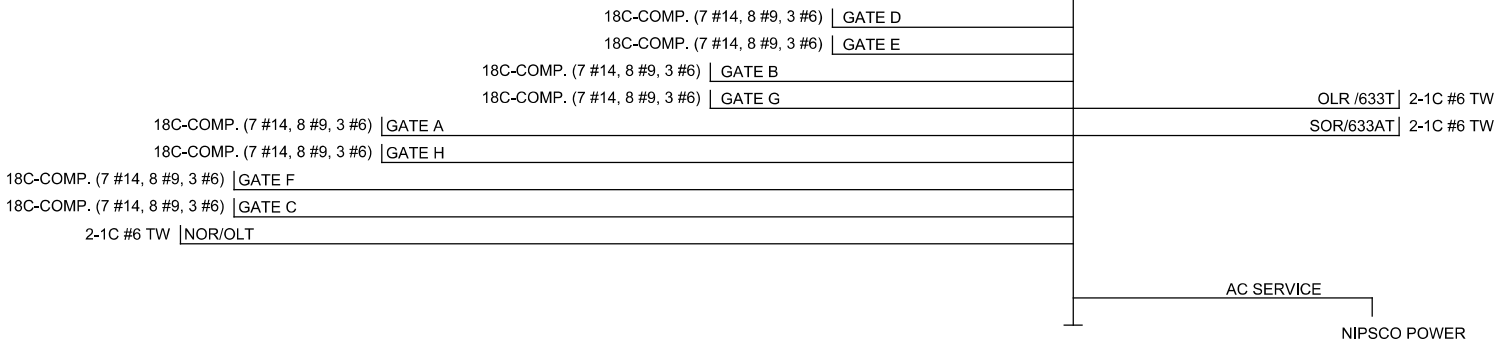
3386+43

NORTH
TO CHICAGO



NOTES:

- RIDGE RD IS A QUIET ZONE CROSSING. INSTALL A FOUR QUADRANT GATE WARNING SYSTEM WITH VEHICLE LOOP DETECTION SYSTEM. DESCENSION OF EXIT GATES MUST BE DELAYED TO PREVENT TRAPPED MOTORIST ON CROSSING.
- THIS CROSSING PRE-EMPTS THE TRAFFIC SIGNALS AT MANOR AVE.
- AUDIO FREQUENCY OVERLAY (AFO) TRACK CIRCUITS ARE USED FOR TRAIN DETECTION AND ACTUATION OF THIS RAIL-HIGHWAY GRADE CROSSING. CONTRACTOR SHALL DESIGN AN AFO ASSIGNMENT PLAN TO GIVE 20 SECONDS MINIMUM WARNING TIME PRIOR TO THE ARRIVAL OF TRAIN AT THIS CROSSING. 790 HZ PHASE SHIFT OVERLAY IS NOT COMPATIBLE 156 HZ ELECTROCODE (5TH ORDER HARMONIC).



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NOT FOR CONSTRUCTION		SERIES CSGPL-25 OF CSGPL-35
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
RIDGE RD HWY GRADE CROSSING SYSTEM		
FILENAME	SHT_WL_CSIG_PLN_730	SHEET
SCALE	AS NOTED	133 OF 248

NOT FOR CONSTRUCTION		SERIES CSGPL-26 OF CSGPL-35
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
173RD ST HWY GRADE CROSSING SYSTEM		
FILENAME	SHT_WL_CSGI_PLN_731	SHEET
SCALE	AS NOTED	134 OF 248

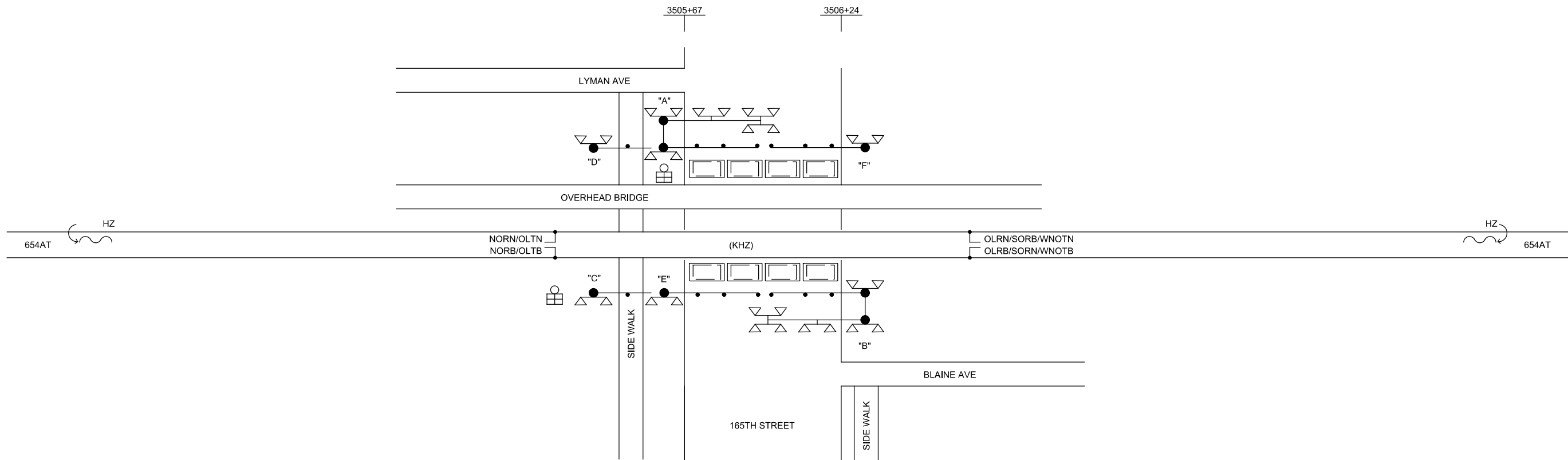
SOUTH
TO MUNSTER/DYER

NORTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT 165TH ST - 3321'
29 SECONDS AT 79 MILES PER HOUR

MINIMUM LENGTH OF ISLAND CIRCUIT 120 FEET

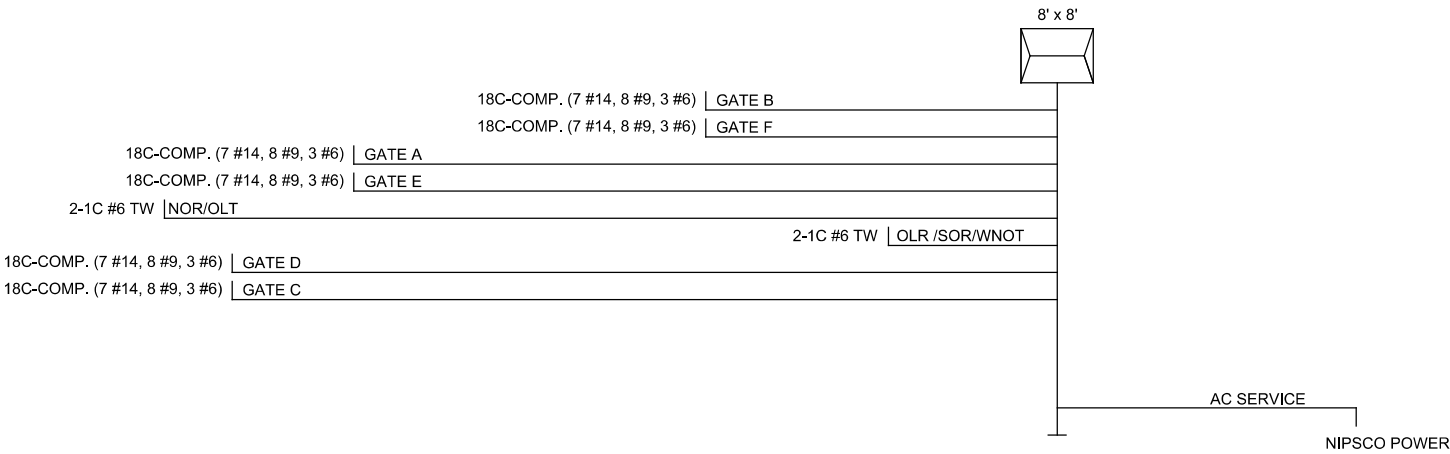
SOUTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT FISHER STREET - 3689'
32 SECONDS AT 79 MILES PER HOUR

NORTH
TO CHICAGO



NOTES:

- 165TH ST IS A QUIET ZONE CROSSING. INSTALL A FOUR QUADRANT GATE WARNING SYSTEM WITH VEHICLE LOOP DETECTION SYSTEM. DESCENSION OF EXIT GATES MUST BE DELAYED TO PREVENT TRAPPED MORORIST ON CROSSING.
- AUDIO FREQUENCY OVERLAY (AFO) TRACK CIRCUITS ARE USED FOR TRAIN DETECTION AND ACTUATION OF THIS RAIL-HIGHWAY GRADE CROSSING. CONTRACTOR SHALL DESIGN AN AFO ASSIGNMENT PLAN TO GIVE 20 SECONDS MINIMUM WARNING TIMR PRIOR TO THE ARRIVAL OF TRAIN AT THIS CROSSING. 790 HZ PHASE SHIFT OVERLAY IS NOT COMPATIBLE 156 HZ ELECTROCODE (5TH ORDER HARMONIC).



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WEST LAKE

CORRIDOR

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SERIES
CSGPL-27 OF CSGPL-35

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

165TH ST HWY GRADE CROSSING
SYSTEM

FILENAME	SHT_WL_CSIG_PLN_732	SHEET
SCALE	AS NOTED	135 OF 248

PLOT DATE: 7/19/2017 9:39:44 PM JKJELMA

NOT FOR CONSTRUCTION		SERIES CSGPL-28 OF CSGPL-35
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
KENWOOD ST HWY GRADE CROSSING SYSTEM		
FILENAME	SHT_WL_CSGI_PLN_733	SHEET
SCALE	AS NOTED	136 OF 248

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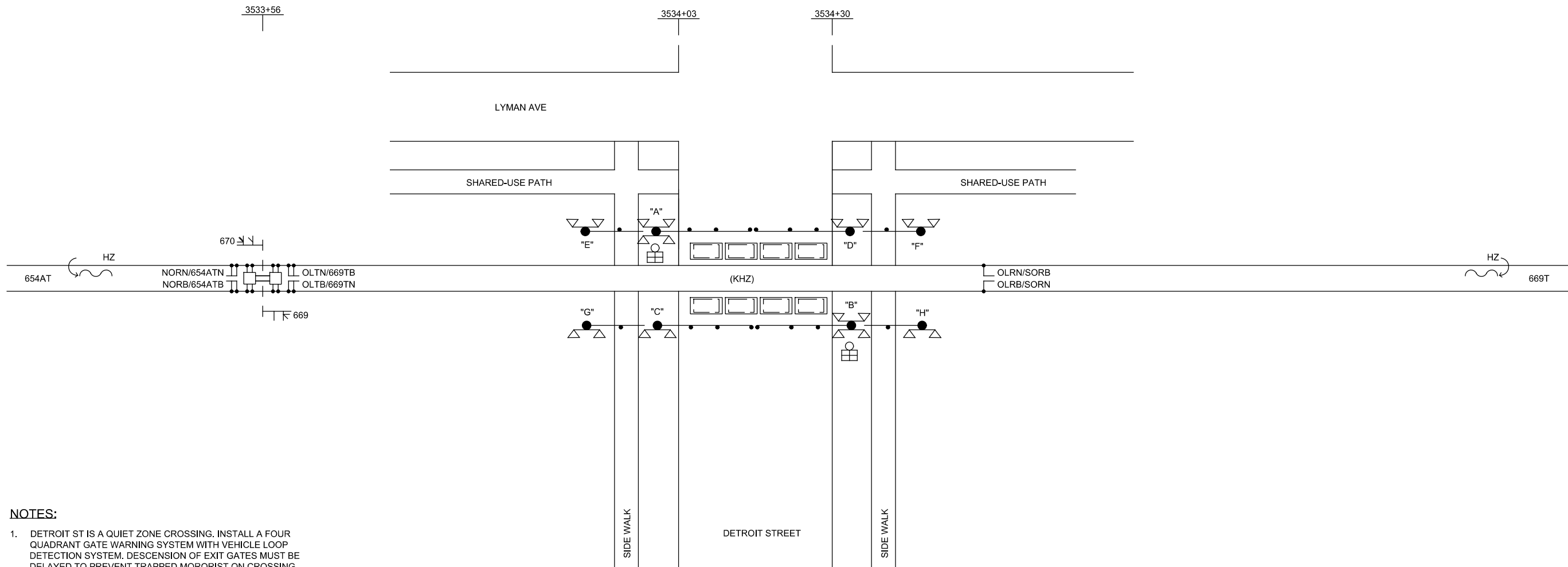
SOUTH
TO MUNSTER/DYER

NORTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT DETROIT STREET - 3318'
29 SECONDS AT 79 MILES PER HOUR

MINIMUM LENGTH OF ISLAND CIRCUIT 120 FEET

SOUTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT DETROIT STREET - 3637'
31 SECONDS AT 79 MILES PER HOUR

NORTH
TO CHICAGO



NOTES:

- DETROIT ST IS A QUIET ZONE CROSSING. INSTALL A FOUR QUADRANT GATE WARNING SYSTEM WITH VEHICLE LOOP DETECTION SYSTEM. DESCENSION OF EXIT GATES MUST BE DELAYED TO PREVENT TRAPPED MORORIST ON CROSSING.
- AUDIO FREQUENCY OVERLAY (AFO) TRACK CIRCUITS ARE USED FOR TRAIN DETECTION AND ACTUATION OF THIS RAIL-HIGHWAY GRADE CROSSING. CONTRACTOR SHALL DESIGN AN AFO ASSIGNMENT PLAN TO GIVE 20 SECONDS MINIMUM WARNING TIMR PRIOR TO THE ARRIVAL OF TRAIN AT THIS CROSSING. 790 HZ PHASE SHIFT OVERLAY IS NOT COMPATIBLE 156 HZ ELECTROCODE (5TH ORDER HARMONIC).

2-1C #6 TW | NOR/654AT
2-1C #6 TW | OLT/669T
2-7C #9 | SIGNAL 669
2-7C #9 | SIGNAL 670

18C-COMP. (7 #14, 8 #9, 3 #6) | GATE A
18C-COMP. (7 #14, 8 #9, 3 #6) | GATE C
18C-COMP. (7 #14, 8 #9, 3 #6) | GATE E
18C-COMP. (7 #14, 8 #9, 3 #6) | GATE G
18C-COMP. (7 #14, 8 #9, 3 #6) | GATE H
18C-COMP. (7 #14, 8 #9, 3 #6) | GATE F
18C-COMP. (7 #14, 8 #9, 3 #6) | GATE D
18C-COMP. (7 #14, 8 #9, 3 #6) | GATE B

2-1C #6 TW | OLR /SOR

AC SERVICE

NIPSCO POWER

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NOT FOR CONSTRUCTION		SERIES CSGPL-30 OF CSGPL-35
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
DETROIT ST HWY GRADE CROSSING SYSTEM		
FILENAME	SHT_WL_CSIG_PLN_735	SHEET
SCALE	AS NOTED	138 OF 248

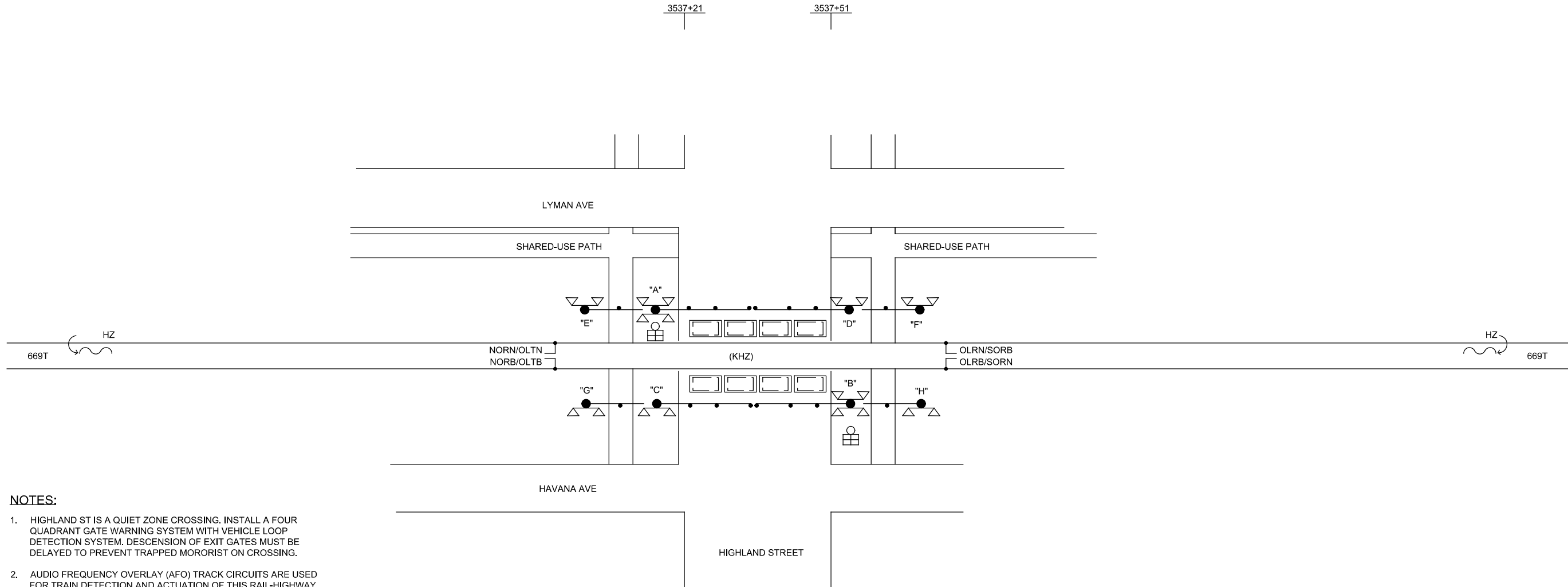
SOUTH
TO MUNSTER/DYER

NORTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT HIGHLAND ST - 3636'
31 SECONDS AT 79 MILES PER HOUR

MINIMUM LENGTH OF ISLAND CIRCUIT 120 FEET

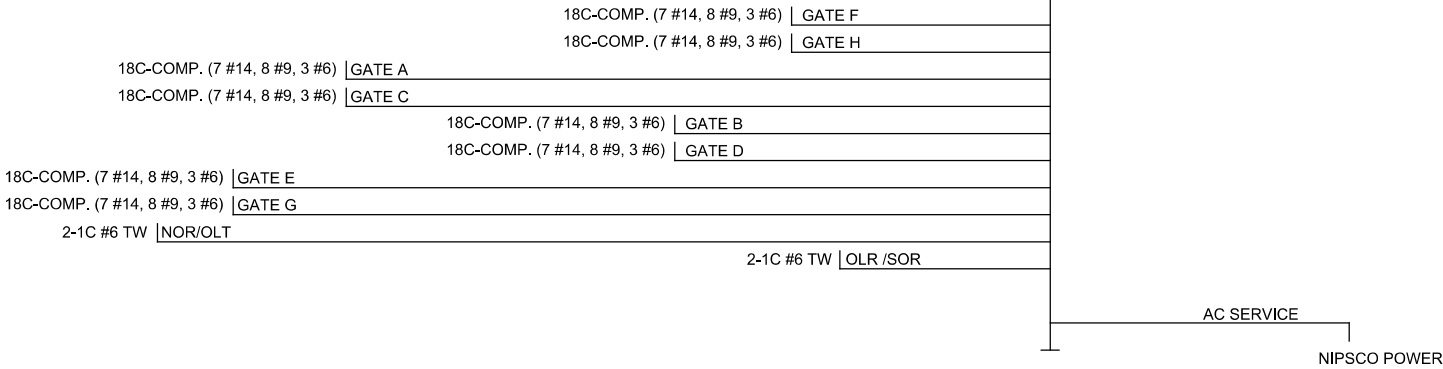
SOUTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT HIGHLAND ST - 3316'
29 SECONDS AT 79 MILES PER HOUR

NORTH
TO CHICAGO



NOTES:

- HIGHLAND ST IS A QUIET ZONE CROSSING. INSTALL A FOUR QUADRANT GATE WARNING SYSTEM WITH VEHICLE LOOP DETECTION SYSTEM. DESCENSION OF EXIT GATES MUST BE DELAYED TO PREVENT TRAPPED MORORIST ON CROSSING.
- AUDIO FREQUENCY OVERLAY (AFO) TRACK CIRCUITS ARE USED FOR TRAIN DETECTION AND ACTUATION OF THIS RAIL-HIGHWAY GRADE CROSSING. CONTRACTOR SHALL DESIGN AN AFO ASSIGNMENT PLAN TO GIVE 20 SECONDS MINIMUM WARNING TIMR PRIOR TO THE ARRIVAL OF TRAIN AT THIS CROSSING. 790 HZ PHASE SHIFT OVERLAY IS NOT COMPATIBLE 156 HZ ELECTROCODE (5TH ORDER HARMONIC).



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SERIES
CSGPL-31 OF CSGPL-35

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

HIGHLAND ST HWY GRADE CROSSING
SYSTEM

FILENAME: SHT_WL_CSIG_PLN_736
SCALE: AS NOTED
SHEET: 139 OF 248



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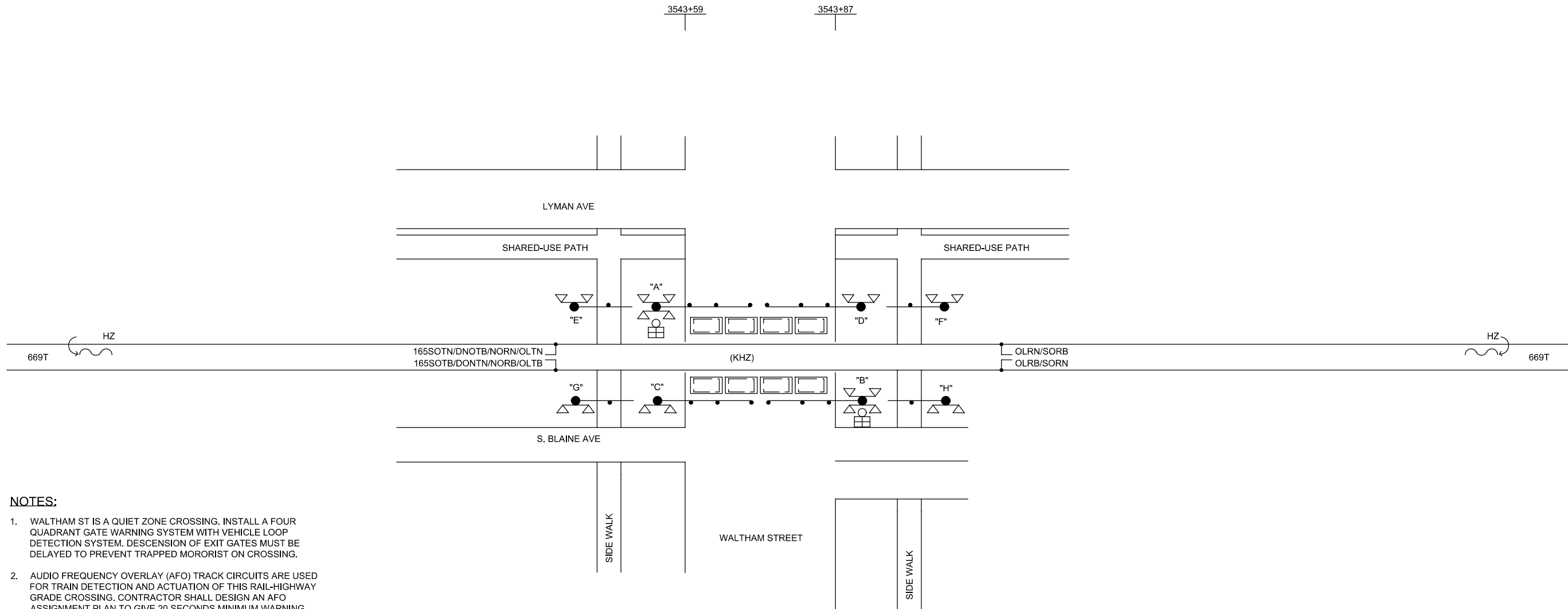
SOUTH
TO MUNSTER/DYER

NORTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT WALTHAM ST - 3704'
32 SECONDS AT 79 MILES PER HOUR

MINIMUM LENGTH OF ISLAND CIRCUIT 120 FEET

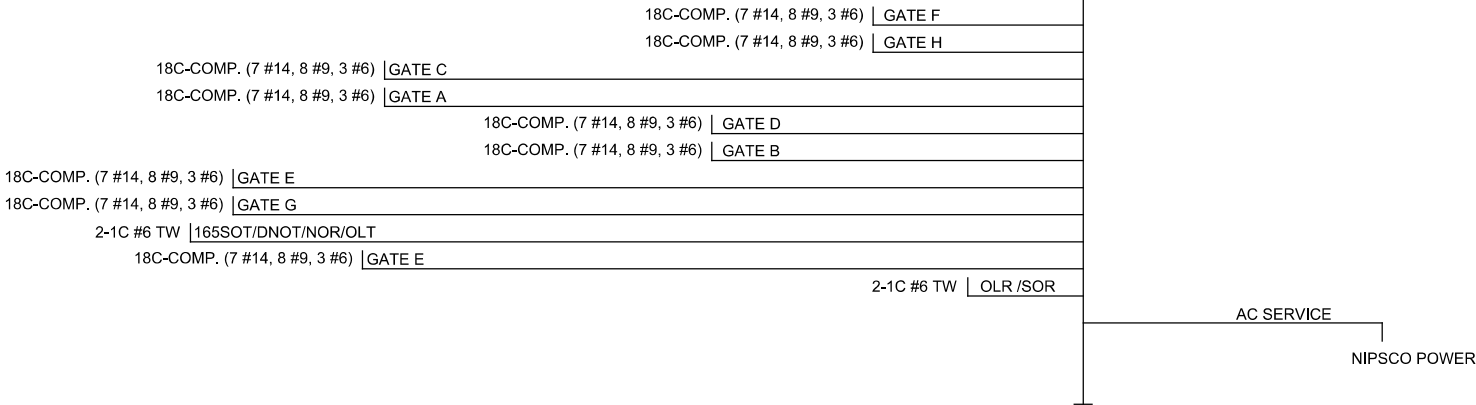
SOUTHBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT WALTHAM ST - 3313'
29 SECONDS AT 79 MILES PER HOUR

NORTH
TO CHICAGO



NOTES:

1. WALTHAM ST IS A QUIET ZONE CROSSING. INSTALL A FOUR QUADRANT GATE WARNING SYSTEM WITH VEHICLE LOOP DETECTION SYSTEM. DESCENSION OF EXIT GATES MUST BE DELAYED TO PREVENT TRAPPED MORORIST ON CROSSING.
2. AUDIO FREQUENCY OVERLAY (AFO) TRACK CIRCUITS ARE USED FOR TRAIN DETECTION AND ACTUATION OF THIS RAIL-HIGHWAY GRADE CROSSING. CONTRACTOR SHALL DESIGN AN AFO ASSIGNMENT PLAN TO GIVE 20 SECONDS MINIMUM WARNING TIMR PRIOR TO THE ARRIVAL OF TRAIN AT THIS CROSSING. 790 HZ PHASE SHIFT OVERLAY IS NOT COMPATIBLE 156 HZ ELECTROCODE (5TH ORDER HARMONIC).



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SERIES
CSGPL-32 OF CSGPL-35

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

WALTHAM ST HWY GRADE CROSSING
SYSTEM

FILENAME SHT_WL_CSIG_PLN_737 SHEET
SCALE AS NOTED 140 OF 248



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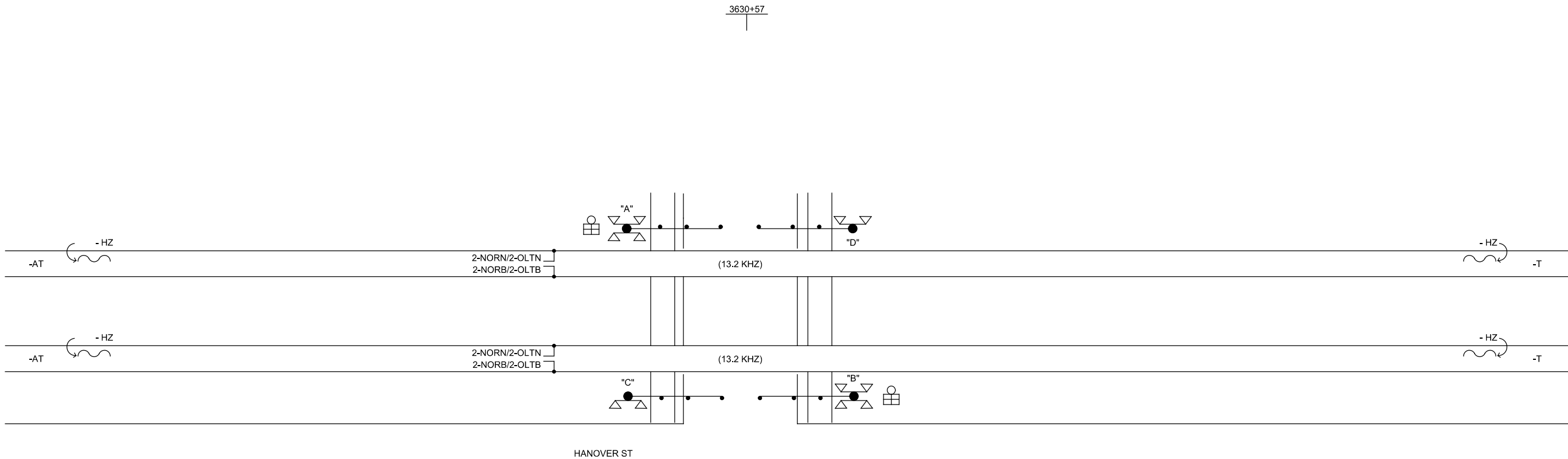
WEST
TO CHICAGO

EASTBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT SHEFFIELD AVE - 1100'
30 SECONDS AT 25 MILES PER HOUR

MINIMUM LENGTH OF ISLAND CIRCUIT 120 FEET

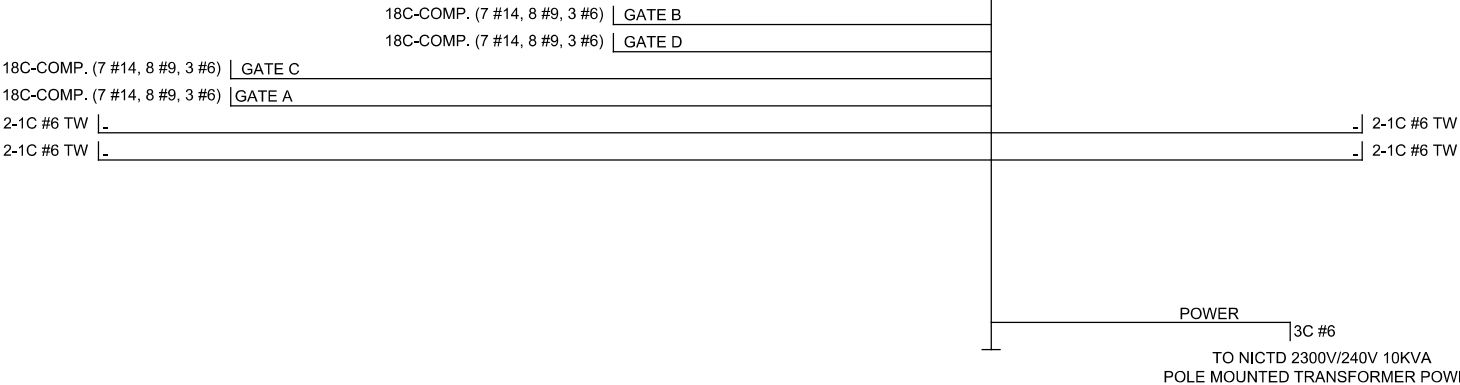
WESTBOUND APPROACH LENGTH FOR
WARNING SYSTEM AT SHEFFIELD AVE - 1100'
30 SECONDS AT 25 MILES PER HOUR

EAST
TO SOUTH BEND



NOTES:

- AUDIO FREQUENCY OVERLAY (AFO) TRACK CIRCUITS ARE USED FOR TRAIN DETECTION AND ACTUATION OF THIS RAIL-HIGHWAY GRADE CROSSING. CONTRACTOR SHALL DESIGN AN AFO ASSIGNMENT PLAN TO GIVE 20 SECONDS MINIMUM WARNING TIMR PRIOR TO THE ARRIVAL OF TRAIN AT THIS CROSSING. 790 HZ PHASE SHIFT OVERLAY IS NOT COMPATIBLE 156 HZ ELECTROCODE (5TH ORDER HARMONIC).
- THIS HIGHWAY GRADE CROSSING IS LOCATED WITHIN HAMMOND CP 68.8 INTERLOCKING LIMITS.



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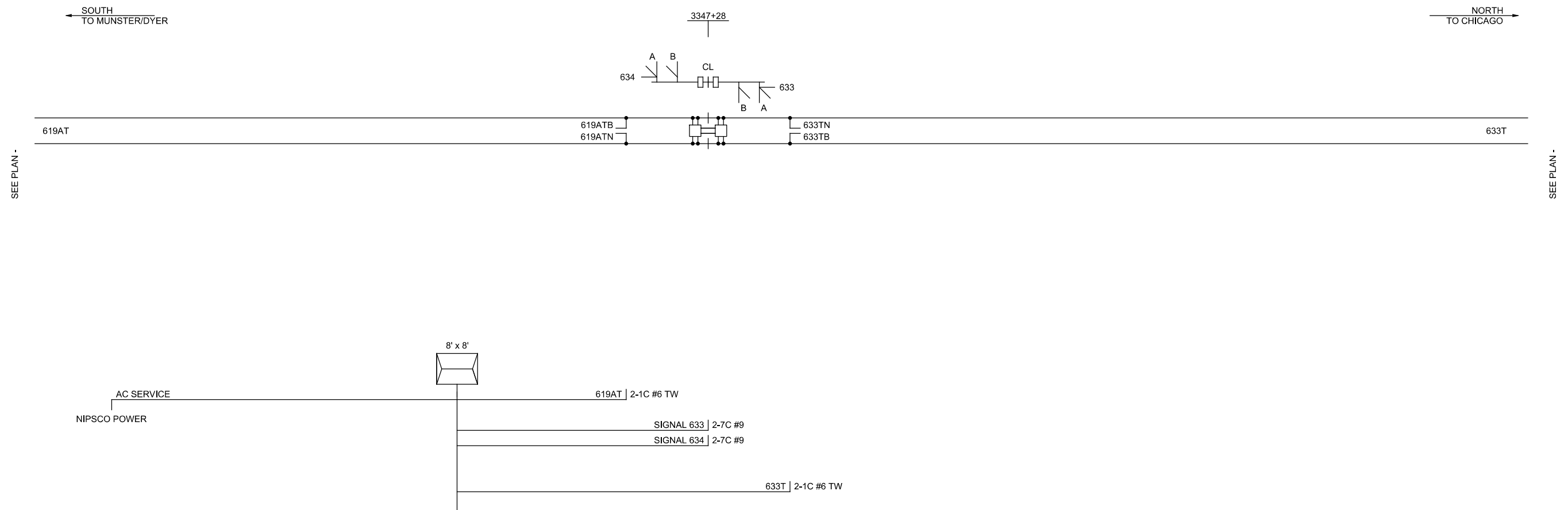
SERIES CSGPL-34 OF CSGPL-35

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

SHEFFIED AVE HWY GRADE CROSSING
SYSTEM

FILENAME	SHT_WL_CSIG_PLN_739	SHEET
SCALE	AS NOTED	142 OF 248

DESIGNED:	KT
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SERIES
CSGDT-1 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

INTERMEDIATE SIG LAYOUT TYP SYSTEM

FILENAME	SHT_WL_CSIG_DET_800	SHEET
SCALE	AS NOTED	144 OF 248

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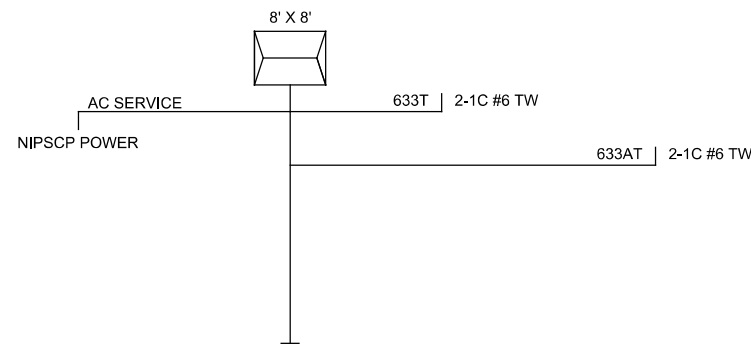
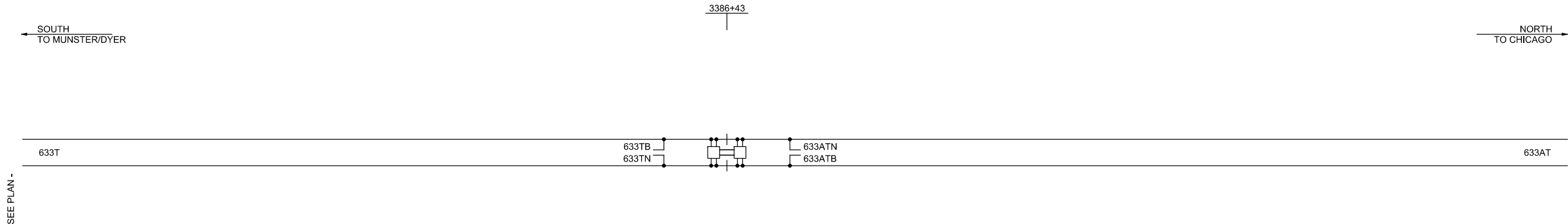
NOT FOR CONSTRUCTION

SERIES
CSGDT-2 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

EC REPEATER LAYOUT TYP
SYSTEM

FILENAME	SHT_WL_CSIG_DET_801	SHEET
SCALE	AS NOTED	145 OF 248



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WEST LAKE
CORRIDOR

DYER TO HAMMOND, INDIANA

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NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

CROSSING START LAYOUT TYPICAL
SYSTEM

FILENAME

SHT_WL_CSIG_DET_803

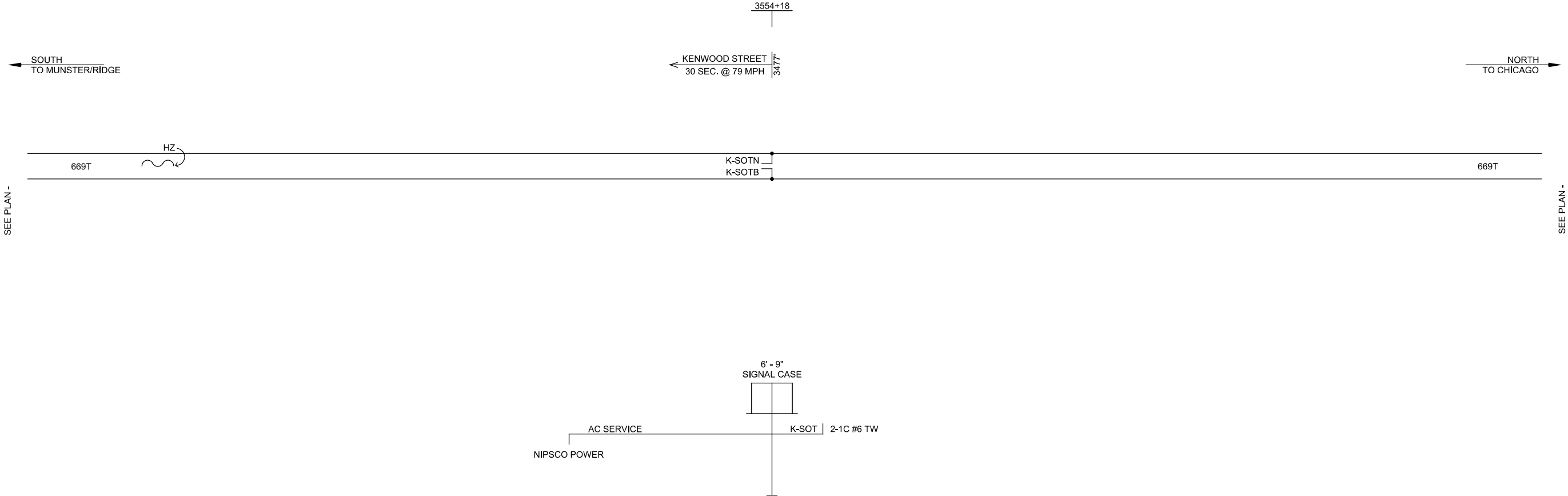
SCALE

AS NOTED

SHEET

147 OF 248

SERIES
CSGDT-4 OF CSGDT-41



PLOT DATE: 7/19/2017 9:41:42 PM JKJELMA



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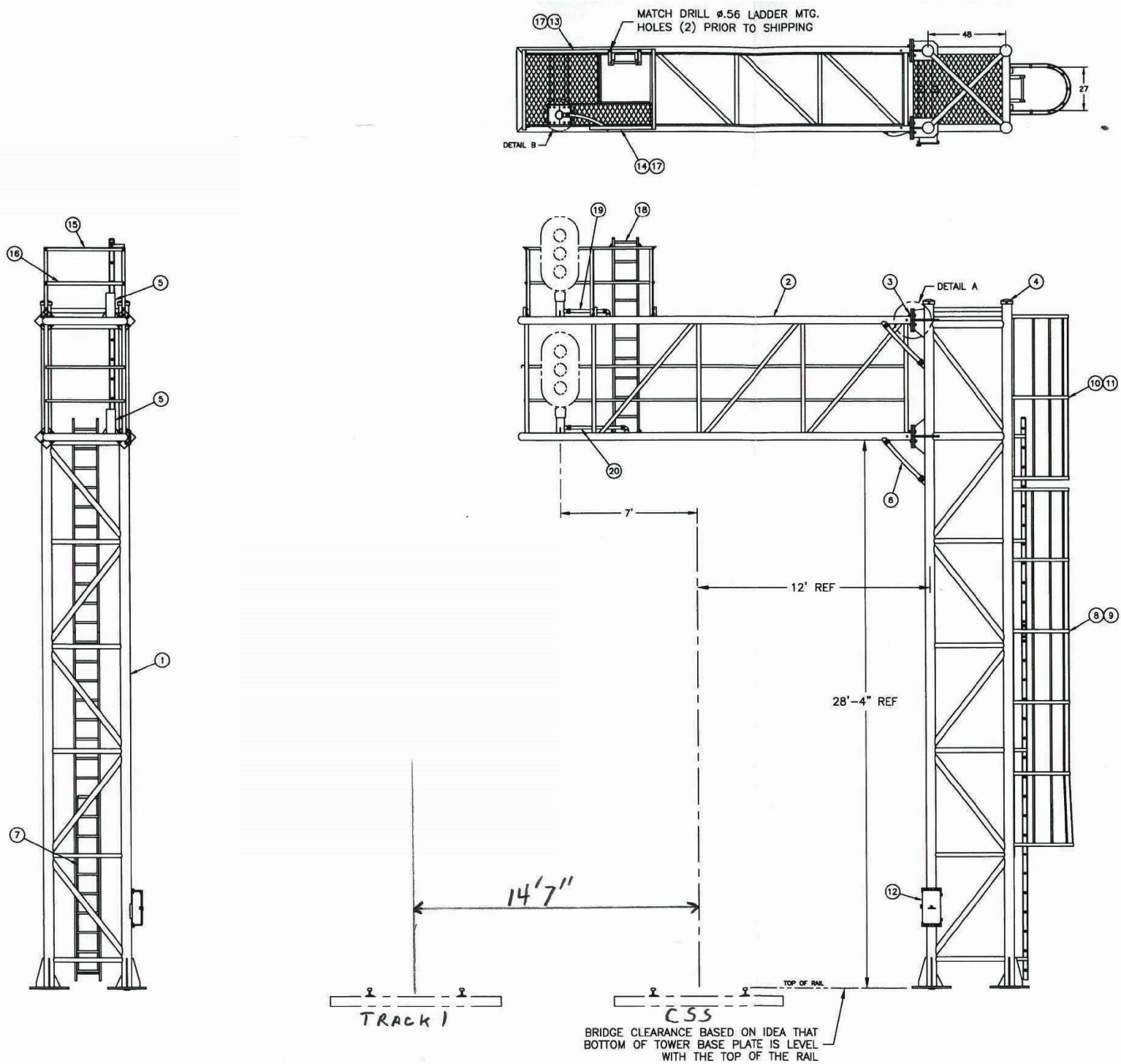
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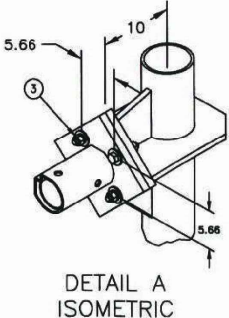
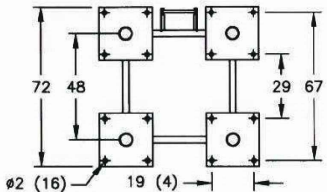
DYER TO HAMMOND, INDIANA

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NOT FOR CONSTRUCTION		SERIES CSGDT-5 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
CANTILEVER SIGNAL LAYOUT TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_804	SHEET
SCALE	AS NOTED	148 OF 248



BILL OF MATERIAL					
ITEM NO.	QTY. REQ'D.	U.O.M.	PART NUMBER	DESCRIPTION	* NOT SHOWN
1	1	EA	070231-86X	WELDMENT, TOWER QNR	
2	1	EA	070475-X8367	ARM WELDMENT, QNR 20'-4"	
3	1	EA	070450-1XH	HARDWARE, QNR ARM MTG. GRD 8	
4	4	EA	035046-8X	PINNACLE 6.175	
5	2	EA	070235-X1791	MAST ASSY, 5' MTG W/STANDARD	
6	2	EA	070692-X31	CONDUIT ASSY, FLEX 36" W/ CON	
7	1	EA	071352-4X	LADDER GUARD, 9' W/STANDARD HDW	
8	1	EA	071351-284X	WELDMENT, QNR LADR CAGE 222"	
9	1	EA	071351-284XH	HARDWARE, 19' QNR CAGE W/HDW	
10	1	EA	071351-287X	WELDMENT, QNR LADR CAGE 102"	
11	1	EA	071351-287XH	HARDWARE, 8' QNR LADR CAGE W/HDW	
12	1	EA	092431-X100	JCT BOX, TYPE 431 ADTPR MTG	
13	1	EA	070234-X397	HANDRAIL WELDMENT, 78.5"	
14	1	EA	070234-X398	HANDRAIL WELDMENT, 38.5"	
15	2	EA	070234-26	ANGLE, HANDRAIL	
16	2	EA	070234-27	END, MIDDLE RAIL	
17	5	EA	071351-298XH1	HARDWARE MTG, STANDARD HDW	
18	1	EA	071351-290AX	LADDER ASSY, 10' W/BRAKETS	
19	1	EA	076058-X29	CONDUIT ASSY, 1.5" X 29"	
20	1	EA	076058-X39	CONDUIT ASSY, 1.5" X 39"	



GENERAL NOTES

- 1) SIGNAL HEADS SHALL INCLUDE LED LAMPS
- 2) WAYSIDE SIGNAL HEADS MAY NEED TO BE OFFSET HEAD TO PROVIDE PROPER PREVIEW AROUND CATENARY POLES AND PORTAL STRUCTURES.

PLOT DATE: 7/19/2017 9:41:52 PM JKJELLM

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CORRIDOR

DYER TO HAMMOND, INDIANA

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DATE:	07/21/17

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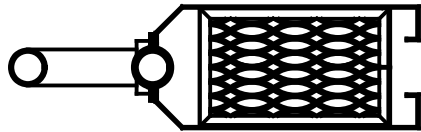
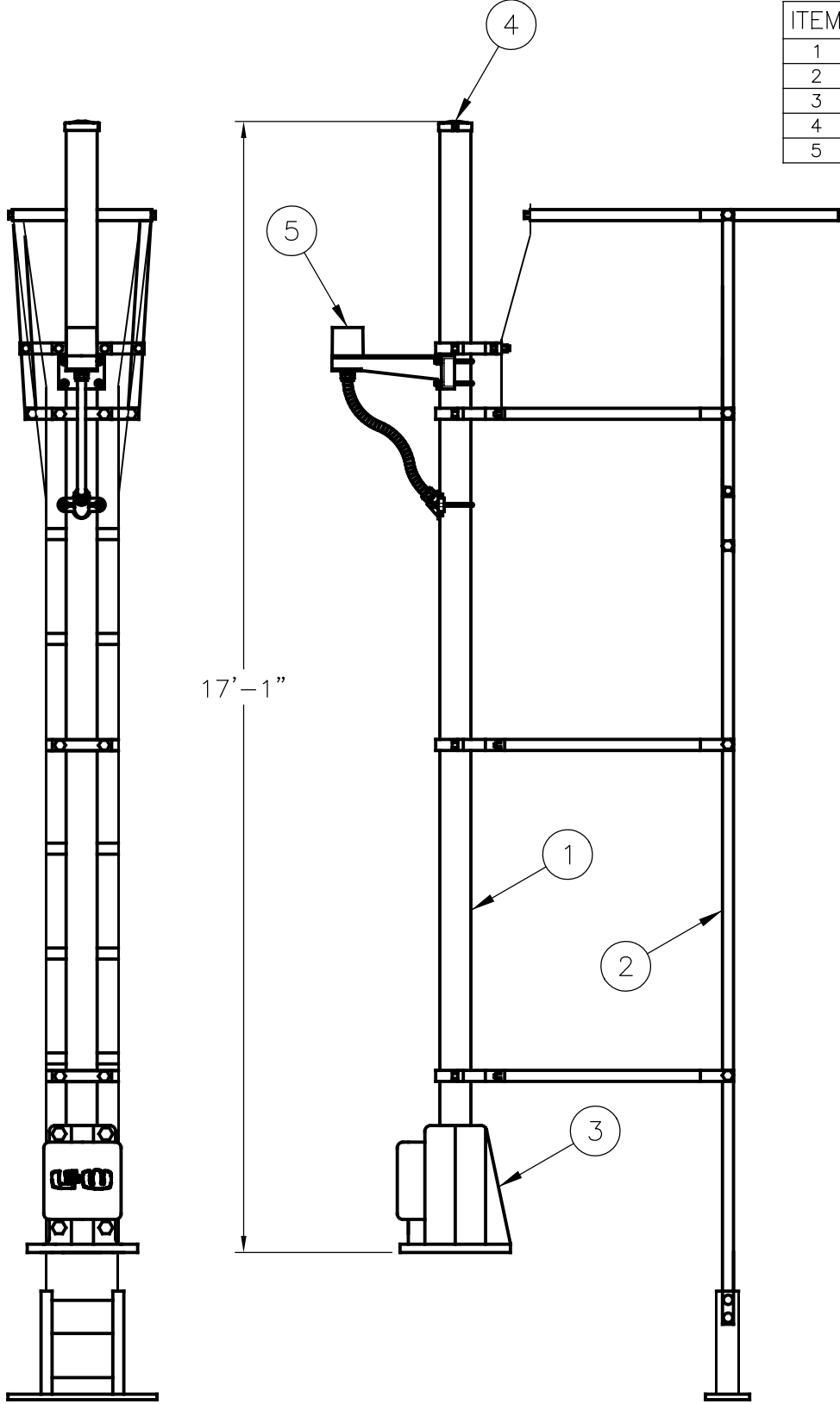
SERIES CSGDT-6 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

COLORLIGHT SIGNAL LAYOUT-
SINGLE UNIT TYPICAL
SYSTEM

FILENAME	SHT_WL_CSIG_DET_805	SHEET
SCALE	AS NOTED	149 OF 248

ITEM	PART #	QTY	DESCRIPTION
1	5L7956	1	ø5" ALUMINUM MAST MACHINED FOR 15'-0" ASPECT
2	5J7461-3X	1	LADDER & REAR PLATFORM ASSEMBLY
3	7D5920-X	1	JUNCTION BASE w/ 11 ¹ / ₆ " BOLT SPACING & 24 TERMINAL BLOCKS
4	5Z7500-X	1	CAST ALUMINUM PINNACLE
5	5Z4600-X	1	STANDOFF ASSEMBLY w/ FLEXIBLE CONDUIT



REAR PLATFORM

GENERAL NOTES

- 1) SIGNAL HEADS SHALL INCLUDE LED LAMPS
- 2) WAYSIDE SIGNAL HEADS MAY NEED TO BE OFFSET HEAD TO PROVIDE PROPER PREVIEW AROUND CATENARY POLES AND PORTAL STRUCTURES.

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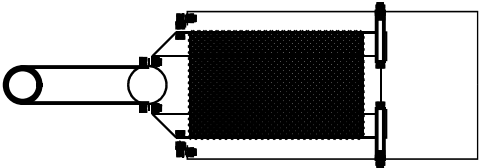
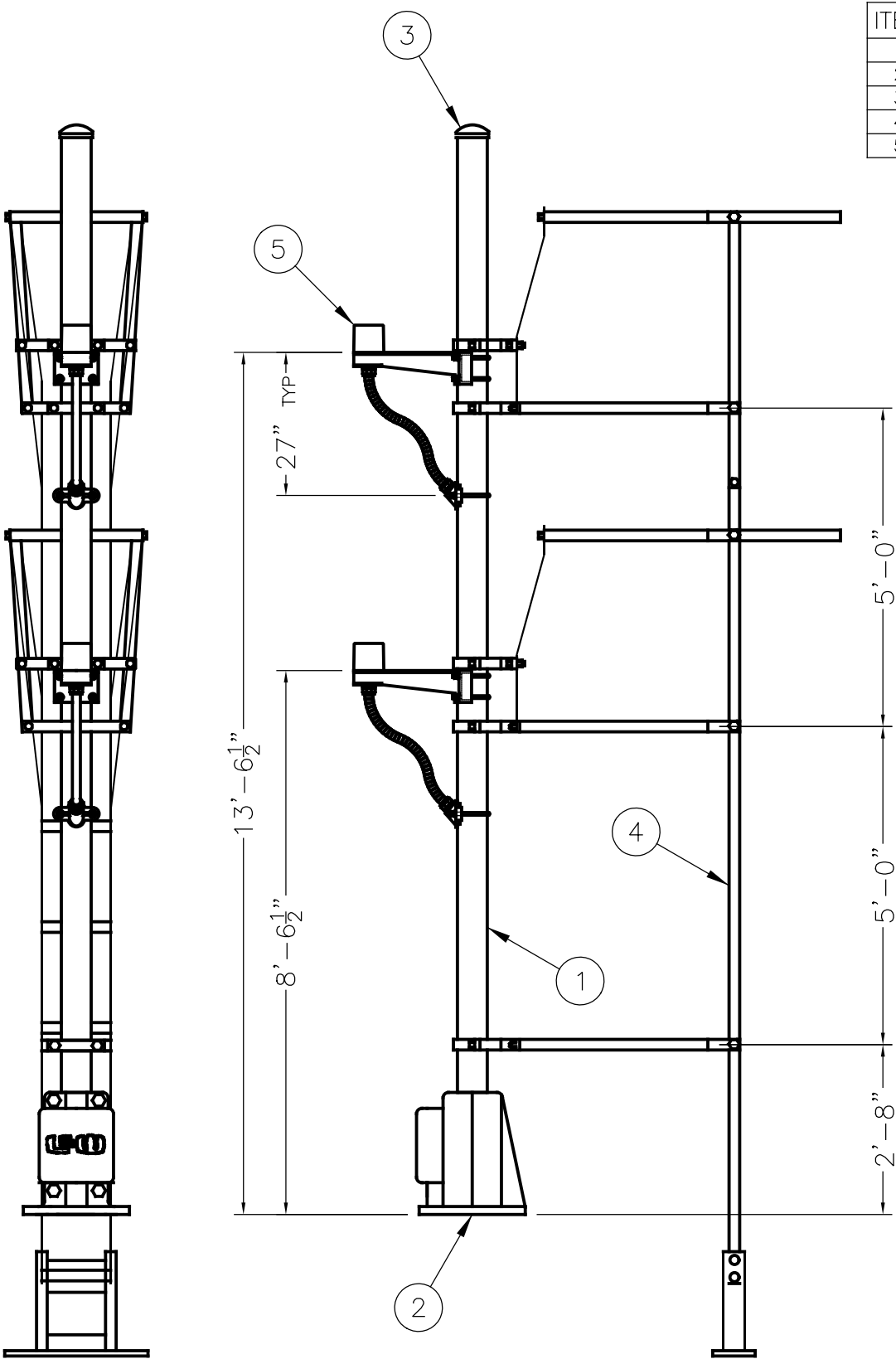
SERIES
CSGDT-7 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

COLORLIGHT SIGNAL LAYOUT-
TWO UNITS TYPICAL
SYSTEM

FILENAME	SHT_WL_CSIG_DET_806	SHEET
SCALE	AS NOTED	150 OF 248

ITEM	PART #	QTY	DESCRIPTION
1	5L7982	1	2-ASPECT 1-WAY Ø5" ALUMINUM MAST – MACHINED
2	7D5920-X	1	JUNCTION BOX BASE w/ 24 TERMINALS & HARDWARE
3	5Z7500-X	1	CAST ALUMINUM PINNACLE
4	5J7462-10X	1	LADDER & PLATFORM ASSEMBLY
5	5Z4600-X	2	STANDOFF w/ FLEXIBLE CONDUIT



TOP VIEW

GENERAL NOTES

- 1) SIGNAL HEADS SHALL INCLUDE LED LAMPS
- 2) WAYSIDE SIGNAL HEADS MAY NEED TO BE OFFSET HEAD TO PROVIDE PROPER PREVIEW AROUND CATENARY POLES AND PORTAL STRUCTURES.

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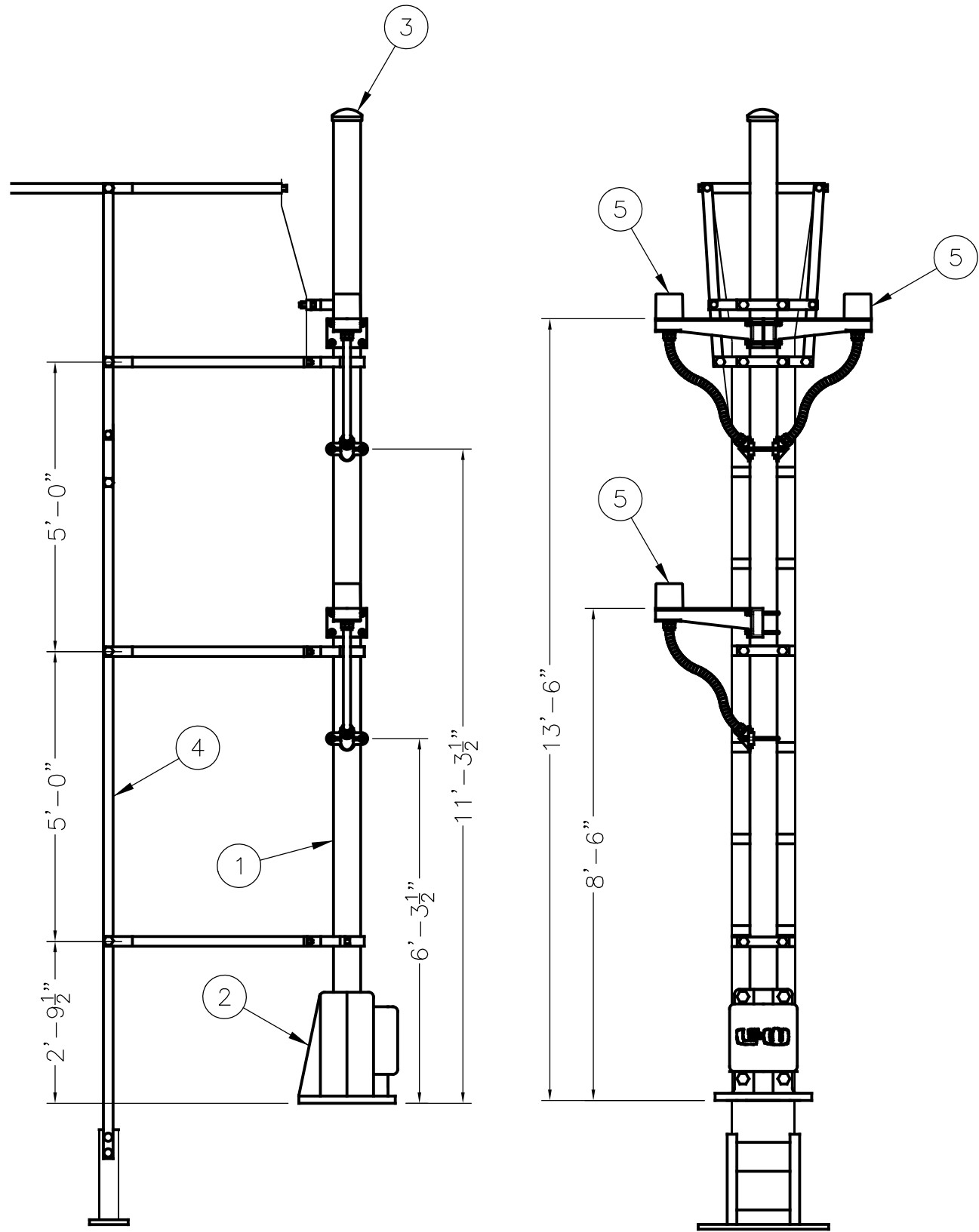
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SERIES
CSGDT-8 OF CSGDT-41

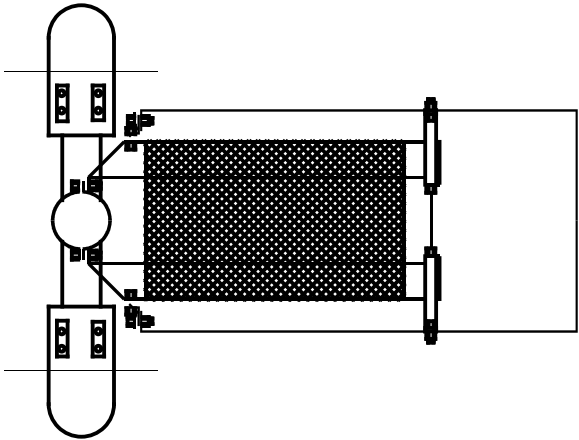
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

**COLORLIGHT SIGNAL LAYOUT-
BIDIRECTIONAL TYPICAL
SYSTEM**

FILENAME	SHT_WL_CSIG_DET_807	SHEET
SCALE	AS NOTED	151 OF 248



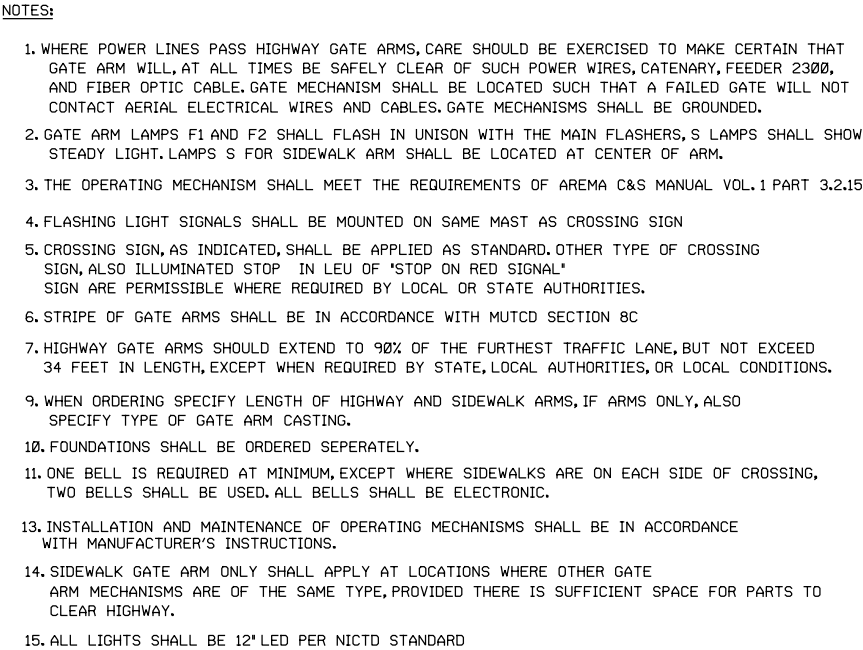
ITEM	PART #	QTY	DESCRIPTION
1	5L7989	1	VARIOUS-ASPECT Ø5" ALUMINUM MAST - MACHINED
2	7D5920-X	1	JUNCTION BOX BASE w/ 24 TERMINALS & HARDWARE
3	5Z7500-X	1	CAST ALUMINUM PINNACLE
4	5J7462-10X	1	LADDER & PLATFORM ASSEMBLY
5	5Z4600-X	3	STANDOFF w/ FLEXIBLE CONDUIT



TOP VIEW

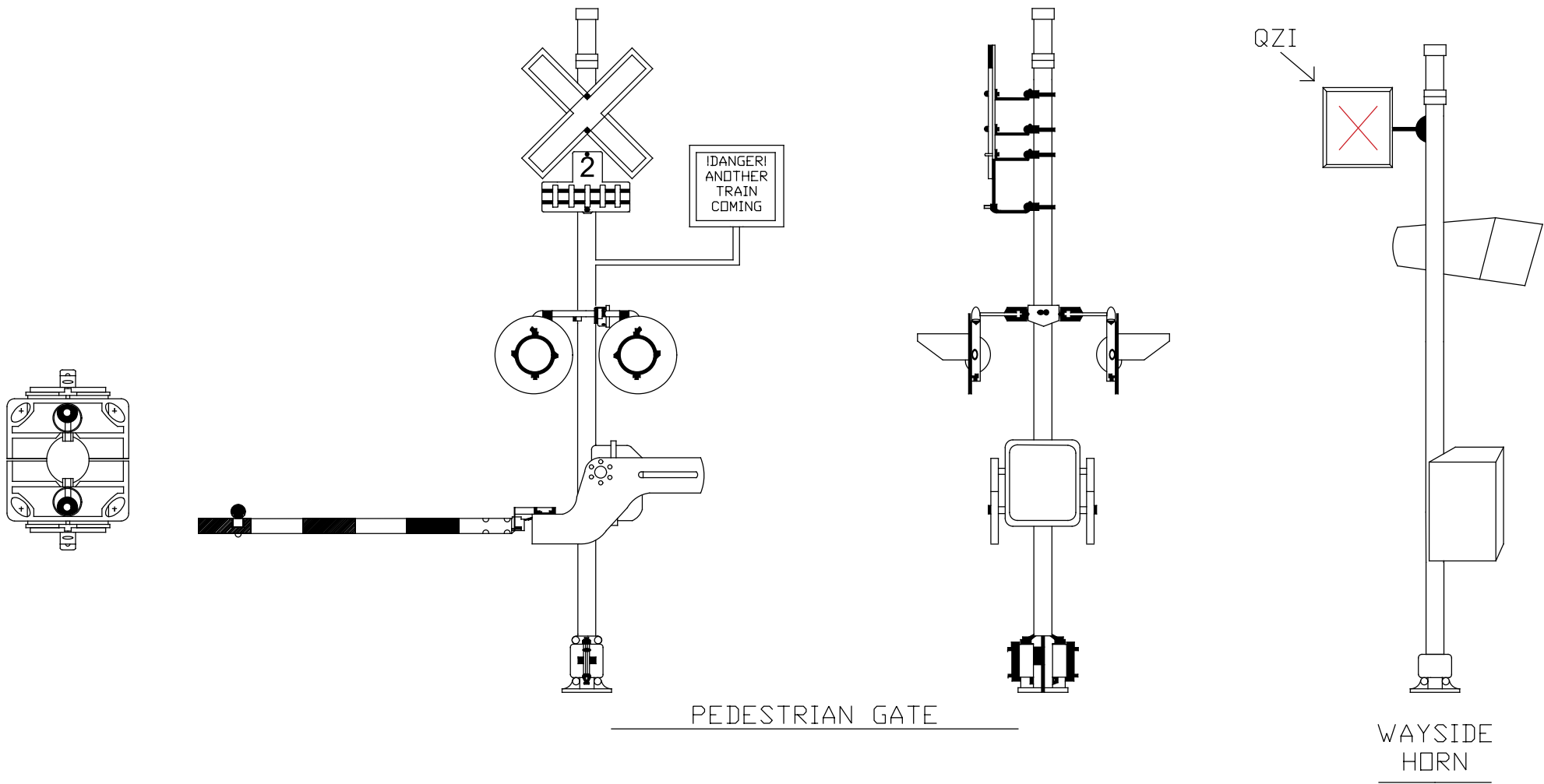
GENERAL NOTES

- 1) SIGNAL HEADS SHALL INCLUDE LED LAMPS
- 2) WAYSIDE SIGNAL HEADS MAY NEED TO BE OFFSET HEAD TO PROVIDE PROPER PREVIEW AROUND CATENARY POLES AND PORTAL STRUCTURES.



- NOTES FOR PEDESTRIAN GATE:
- 1) MAST IS SCH80 X 5" (127 mm) X 16FT (4877mm)
 - 2) HOODS AND BACKGROUNDS ARE ALUMINUM PAINTED FLAT BLACK
 - 3) FLASHER LEDS ARE GE 12" (305mm) RG6-RTFB-48BV1-H7
 - 4) BELL IS WESTERN CULLEN HAYSE MODEL 0777-CFR ELECTRONIC BELL
 - 5) 2 TRACK SIGN SHOWN FOR REFERENCE ONLY
 - 6) CAST ALUMINUM DOUBLE JUNCTION BOX WITH 32 PAIRS OF AAR TERMINALS L&W PART #7D5950-X-PL
 - 7) WIRED FROM JUNCTION BOX TO CROSSARM WITH #16 19 STRAND OKONITE
 - 8) 3/8-16 SILICON BRONZE GROUND STUD INCLUDED IN SECONDARY JUNCTION BOX
 - 9) GATE MECHANISM INCLUDES 24V AC/DC CONTACT HEATER

- NOTES FOR WAYSIDE HORN:
- 1) QUIET ZONE INDICATOR (QZI) IS AIMED TOWARD ONCOMING TRAIN SO THAT IT IS VISIBLE TO TRAIN ENGINEER
 - 2) ENGINEER WILL NOT SOUND LOCOMOTIVE HORN IF QUIET ZONE INDICATOR IS FLASHING



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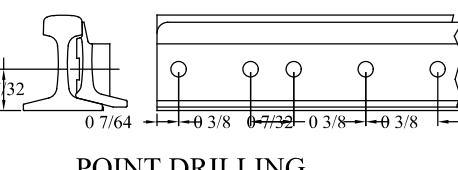
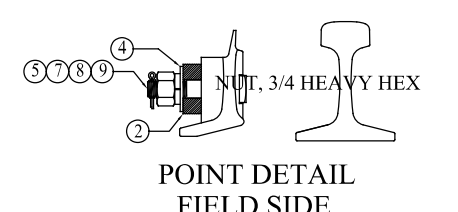
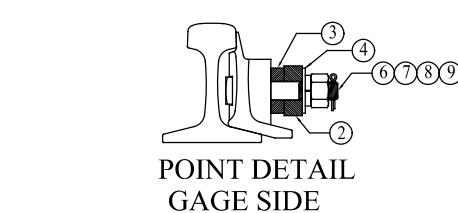
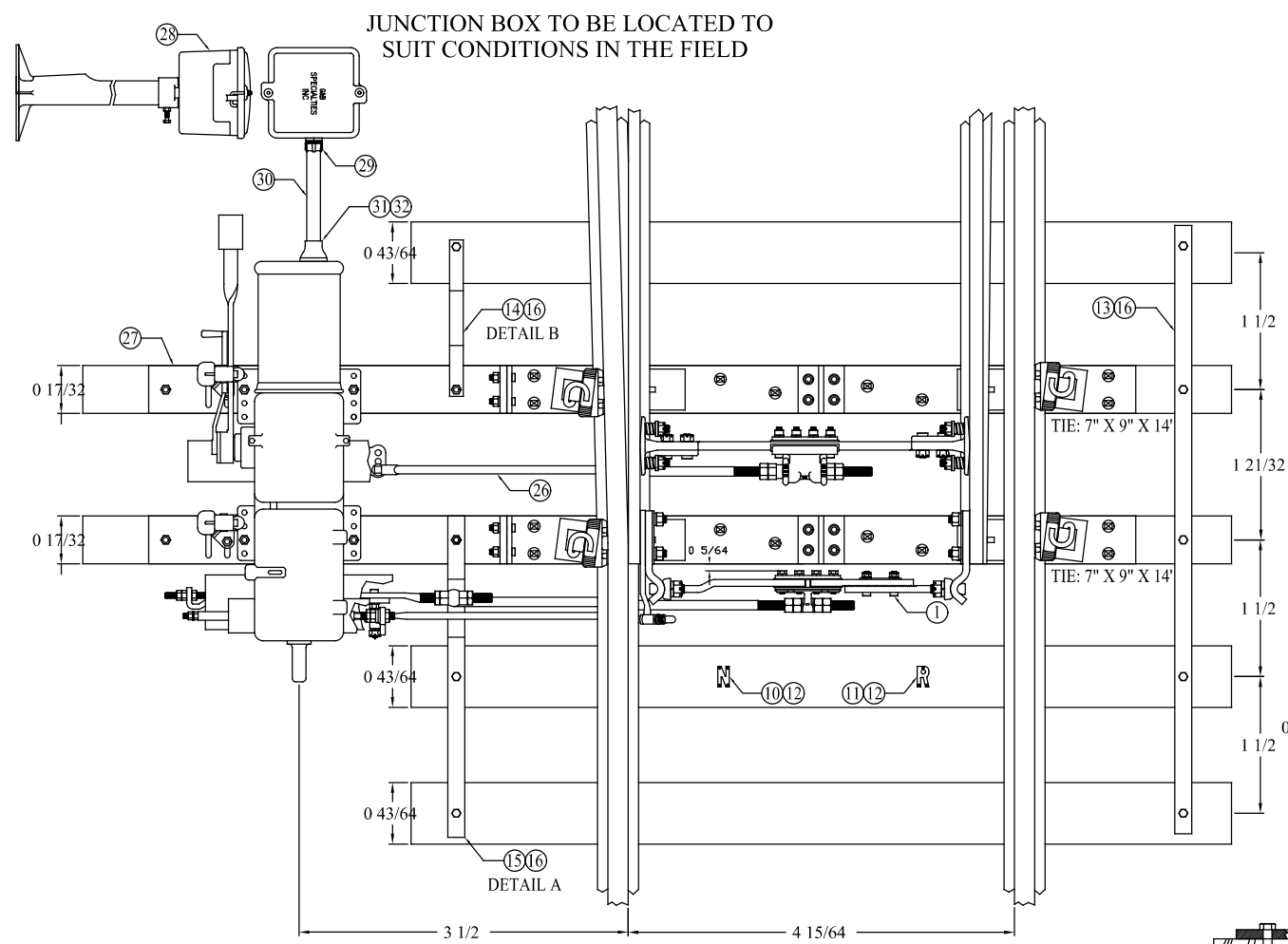
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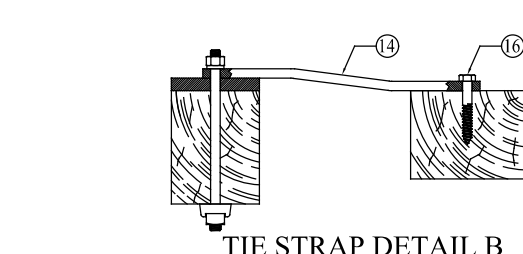
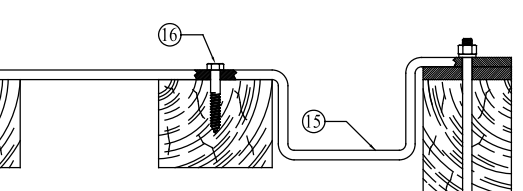
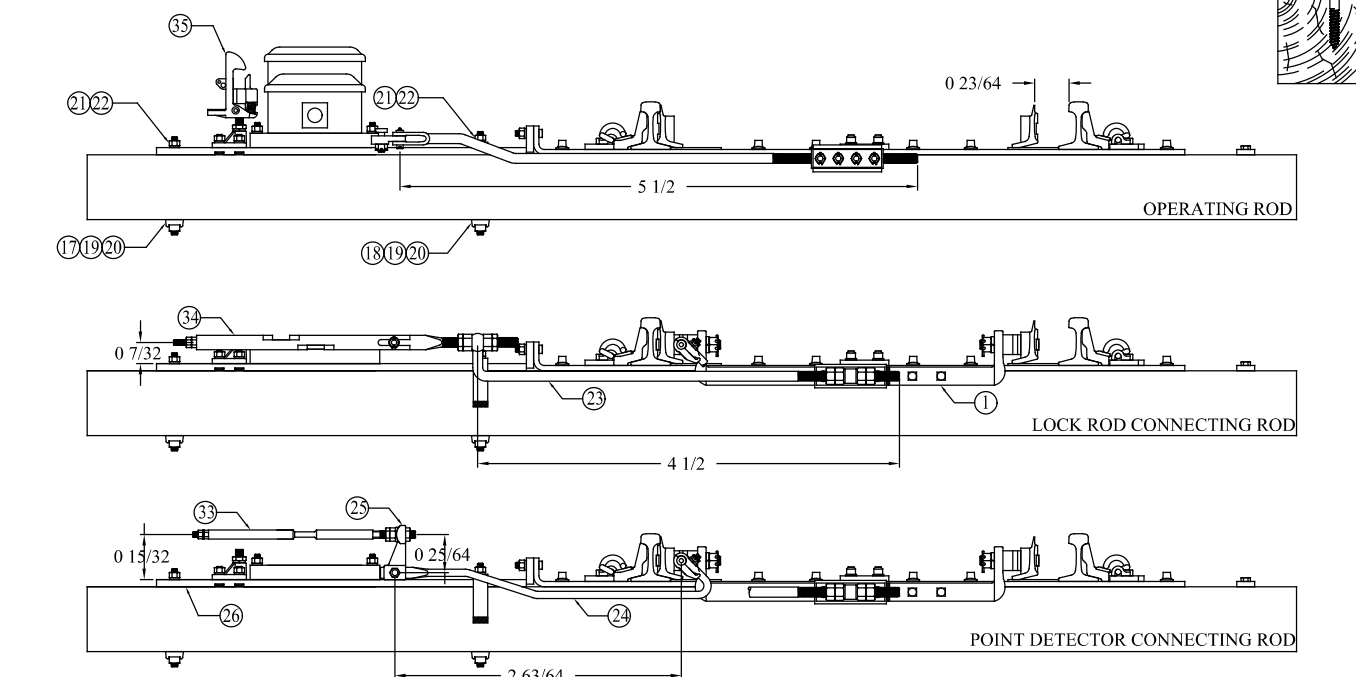
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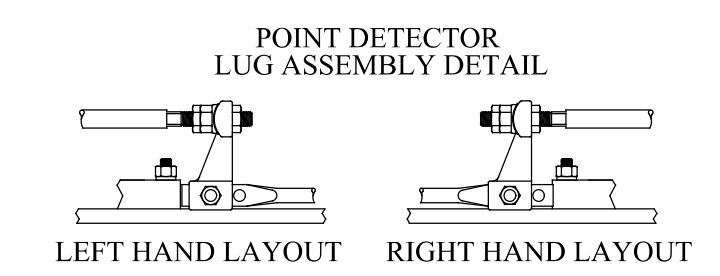
NOT FOR CONSTRUCTION		SERIES CSGDT-10 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
PED GATE & WAYSIDE HORN TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_809	SHEET
SCALE	AS NOTED	153 OF 248



ITEM NUMBER	PART NUMBER	DESCRIPTION	899198X QUANTITY	899198-001X QUANTITY
1	802009X	ROD, SWIVEL FRONT	1	1
2	820571-020	LUG, SWIVEL POINT	2	2
3	820681-006	LUG, BALL END POINT	1	1
4	960100-001	PLATE, STEEL WASHER	2	2
5	990243-525-122	BOLT, 1 X 5 1/4 SQUARE HEAD	2	2
6	990243-600-123	BOLT, 1 X 6 SQUARE HEAD	2	2
7	990403-100-02	WASHER, 1 LOCK	4	4
8	990331-100-02	NUT, 1 HEAVY HEX	4	4
9	990511-150-02	COTTER PIN, 1/4 X 1 1/2	4	4
10	998760-001	LETTER, N	1	1
11	998760-003	LETTER, R	1	1
12	031326-250-01	SCREW, #8 X 2 1/2 FLT. HD	7	7
13	860005-007	TIE STRAP, 5 TIE	1	1
14	860013	TIE STRAP, 2 TIE OFFSET	1	1
15	860010-042	TIE STRAP, 3 TIE DEEP OFFSET	1	1
16	990130-600-02	SCREW, 3/4 X 6 LAG	8	8
17	910922-022	STUD, 3/4 X 14	2	2
18	910922-023	STUD, 3/4 X 15	2	2
19	894403	WASHER, 3/4 GRIP	4	4
20	990302-075-12	NUT, 3/4 HEAVY SQUARE	4	4
21	990331-075-02	WASHER, 3/4 LOCK	4	4
22	990403-075-02	ROD, ASSY LOCK ROD CONNECTING	1	1
23	810884-086-01	ROD, POINT DETECTOR CONNECTING	1	1
24	830209-131-01	LUG ASSY, POINT DETECTOR	1	1
25	920531-001-01	ROD ASSY, OPERATING	1	1
26	840153-120-01	PLATE ASSY, MACHINE MOUNTING	2	2
27	861495-004-01	BOX, 36 TERMINAL JUNCTION	---	1
28	998918-003-01	FITTING, 2" CONDUIT	---	1
29	998687-035	CONDUIT, 2" X 60"	---	1
30	998230-060	CLAMP, SS HEAVY DUTY	---	1
31	998470-265-30	SLEEVE	---	1
32	898192	BAR, POINT DETECTOR	1	1
33	830110-004X	ROD, ADJUSTABLE LOCK	1	1
34	816010-003X	LATCH STAND ASSEMBLY	2	2
35	850997X			



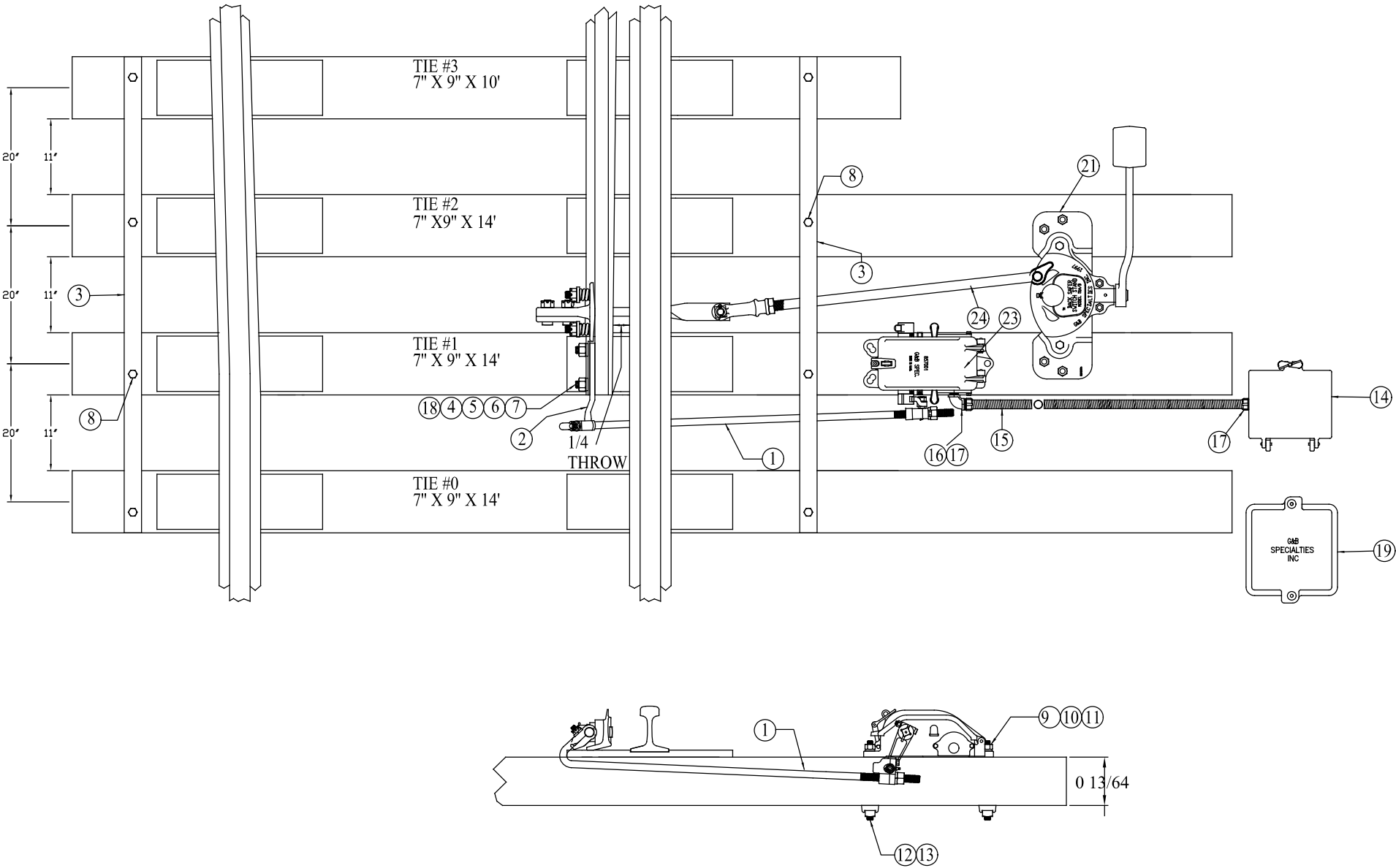
NOTE 1: CONTRACTOR SHALL ENSURE THAT TIES ARE SET AT RIGHT ANGLES TO STRAIGHT STOCK RAIL AND ACCURATELY SPACED PRIOR TO SETTING SWITCH MACHINE.



ANSALDO MODEL DUAL CONTROL ELECTRIC SWITCH MACHINE LAYOUT

NOTE 1: CONTRACTOR SHALL ENSURE THAT TIES ARE SET AT RIGHT ANGLES TO STRAIGHT STOCK RAIL AND ACCURATELY SPACED PRIOR TO SETTING SWITCH MACHINE.

NOTE 2: JUNCTION BOX TO BE LOCATED TO SUIT CONDITIONS IN THE FIELD



ITEM NUMBER	PART NUMBER	DESCRIPTION	899205X QUANTITY	899205-001X QUANTITY	899205-002X QUANTITY
1	830576-002-01X	ROD, SWITCH CIRCUIT CONTROLLER	1	1	1
2	820681-002	LUG, BALL END POINT	1	1	1
3	860004-007	TIE STRAP, 4 HOLE	2	2	2
4	990243-500-103	BOLT, 1 X 5 SQUARE HEAD	2	2	2
5	990403-100-02	WASHER, 1" LOCK	2	2	2
6	990331-100-02	NUT, 1" HVY HEX	2	2	2
7	990511-150-02	COTTER PIN 1/4" X 1 1/2"	2	2	2
8	990130-600-02	LAG SCREW	8	8	8
9	910922-049	STUD, 3/4 X 11 3/4	3	3	3
10	990403-075-02	WASHER 3/4 LOCK	3	3	3
11	990302-075-02	NUT, 3/4 HVY SQ	3	3	3
12	990331-075-02	NUT, 3/4 HVY HEX	3	3	3
13	894403	WASHER, GRIP	3	3	3
14	998919-001-01	JUNCTION BOX	1	-	-
15	998231-048	CONDUIT, 1 1/2 LIQUID TIGHT	1	-	-
16	998530-006	STREET ELBOW, 1 1/2	1	1	-
17	998688-034	CONNECTOR, 1 1/2 STR	2	-	-
18	960100-001	PLATE WASHER	1	1	1
19	998918-003-30	JUNCTION BOX	-	1	-
20	991500-001	2" TO 1 1/2 " REDUCER (NOT SHOWN)	-	1	-
21	NOTE 3	SWITCH STAND	1	1	1
22	NOTE 3	4 3/4 THROW CRANK (NOT SHOWN)	1	1	1
23	N181359	CIRCUIT CONTROLLER	1	1	1
24	NOTE 3	SWITCH STAND CONN ROD	1	1	1
25	NOTE 3	VERTICAL SWITCH ROD	1	1	1

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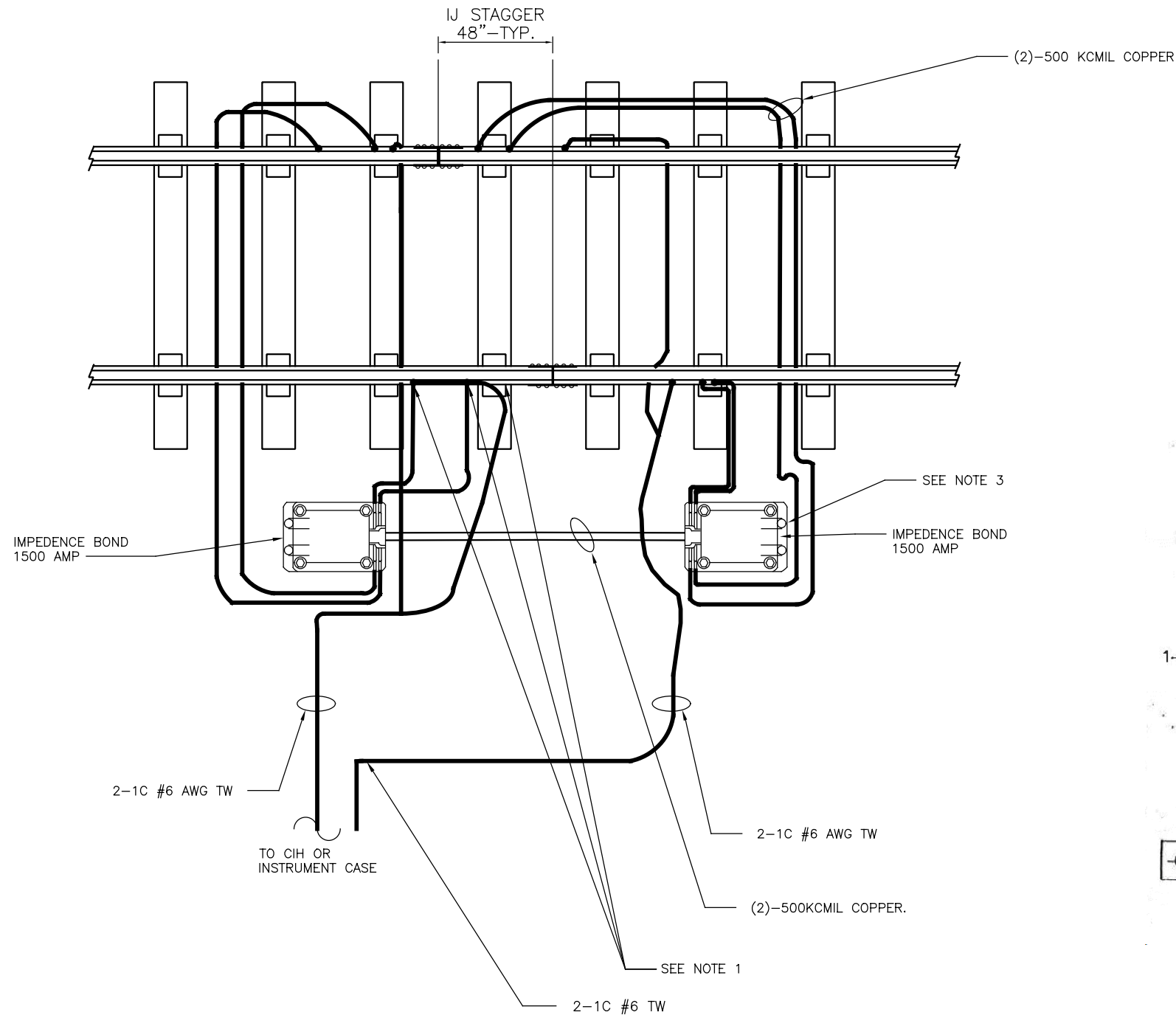
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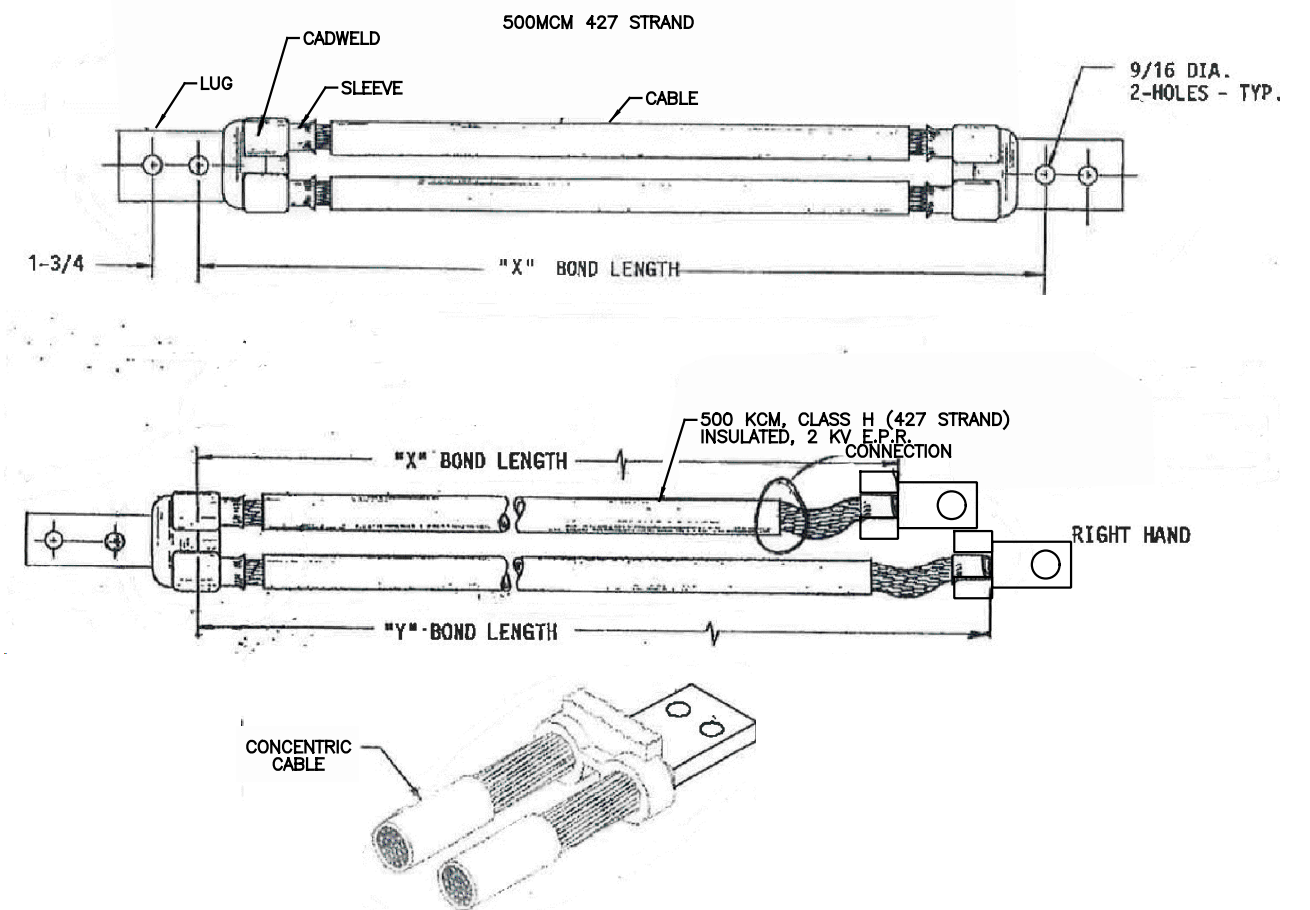
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NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
SPLIT POINT DERAIL LAYOUT TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_811	SHEET
SCALE	AS NOTED	155 OF 248



NOTES:

1. FURNISH AND INSTALL COMPRESSION LUGS ON ALL CABLE CONNECTIONS TO WEB OF RAIL AND TO IMPEDENCE BONDS
2. FURNISH AND INSTALL 500 KCMIL CABLES FOR CABLES CONNECTED TO IMPEDENCE BONDS
3. FURNISH, INSTALL AND SPLICE BONDSTRAND FROM 2-1C #6 TW TO RAILS
4. USE COMPRESSION LUGS FOR BONDSTRAND CONNECTION TO RAIL. BONDSTRAND SHALL BE CONNECTED TO RAIL INDEPENDENT OF THE IMPEDANCE BOND BOLTED RAIL CONNECTION



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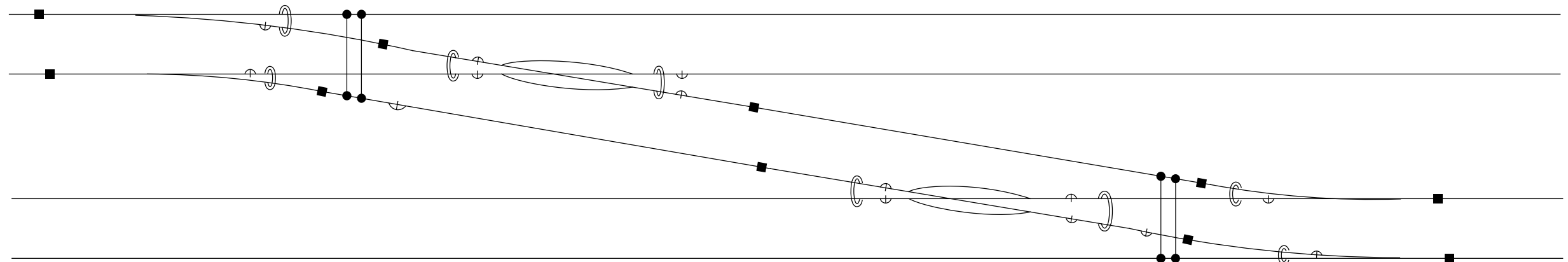


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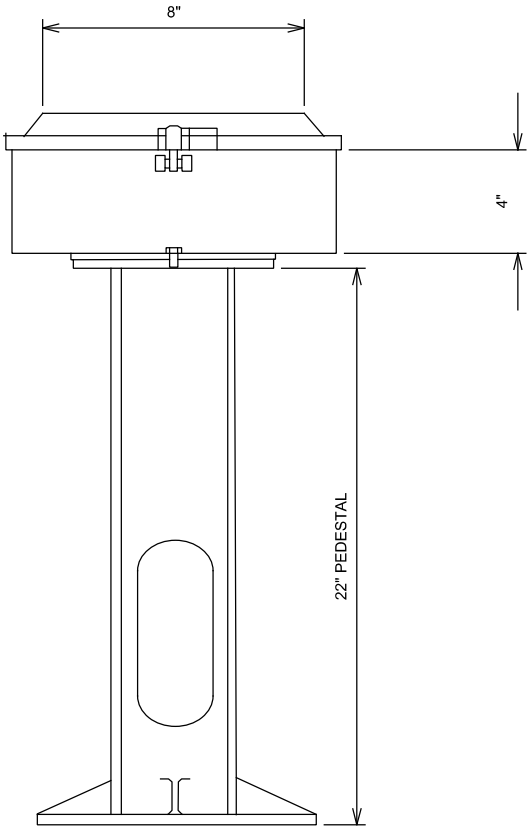
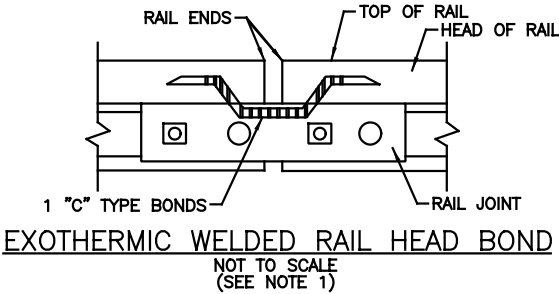
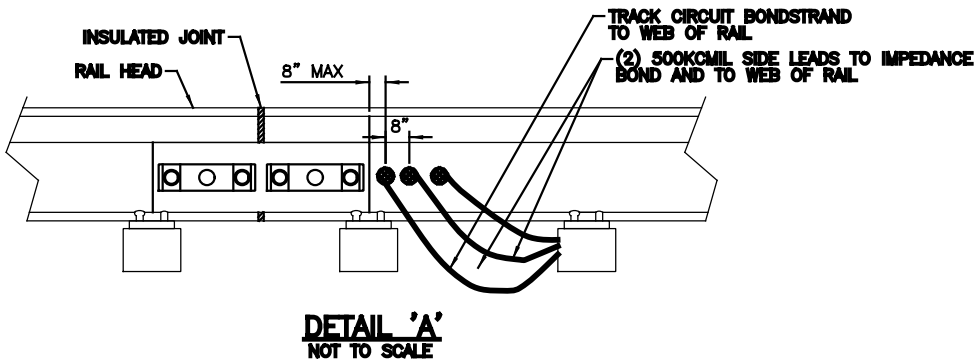
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		CSGDT-13 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
IMPEDANCE BOND LAYOUT TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_812	SHEET
SCALE	AS NOTED	156 OF 248



SINGLE CROSSOVER
NOT TO SCALE

LEGEND

- INSULATED JOINT
- CABLE CONNECTION POINT
- RAIL JOINT
- JUMPER



- NOTES:
- 1. RAIL HEAD BONDS SHALL BE ACCORDANCE WITH THE REQUIREMENTS OF AREMA SIGNAL MANUAL PART 8.1.35. INSTALLATION OF RAIL HEAD BONDS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF AREMA SIGNAL MANUAL PART 8.6.40.
 - 2. WEB OF RAIL DRILLING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF AREMA SIGNAL MANUAL PART 8.6.25.

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SERIES
CSGDT-14 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

PEDESTAL JUNCTION BOX, BONDING
& TRACK CONNECTIONS TYPICAL
SYSTEM

FILENAME	SHT_WL_CSIG_DET_813	SHEET
SCALE	AS NOTED	157 OF 248

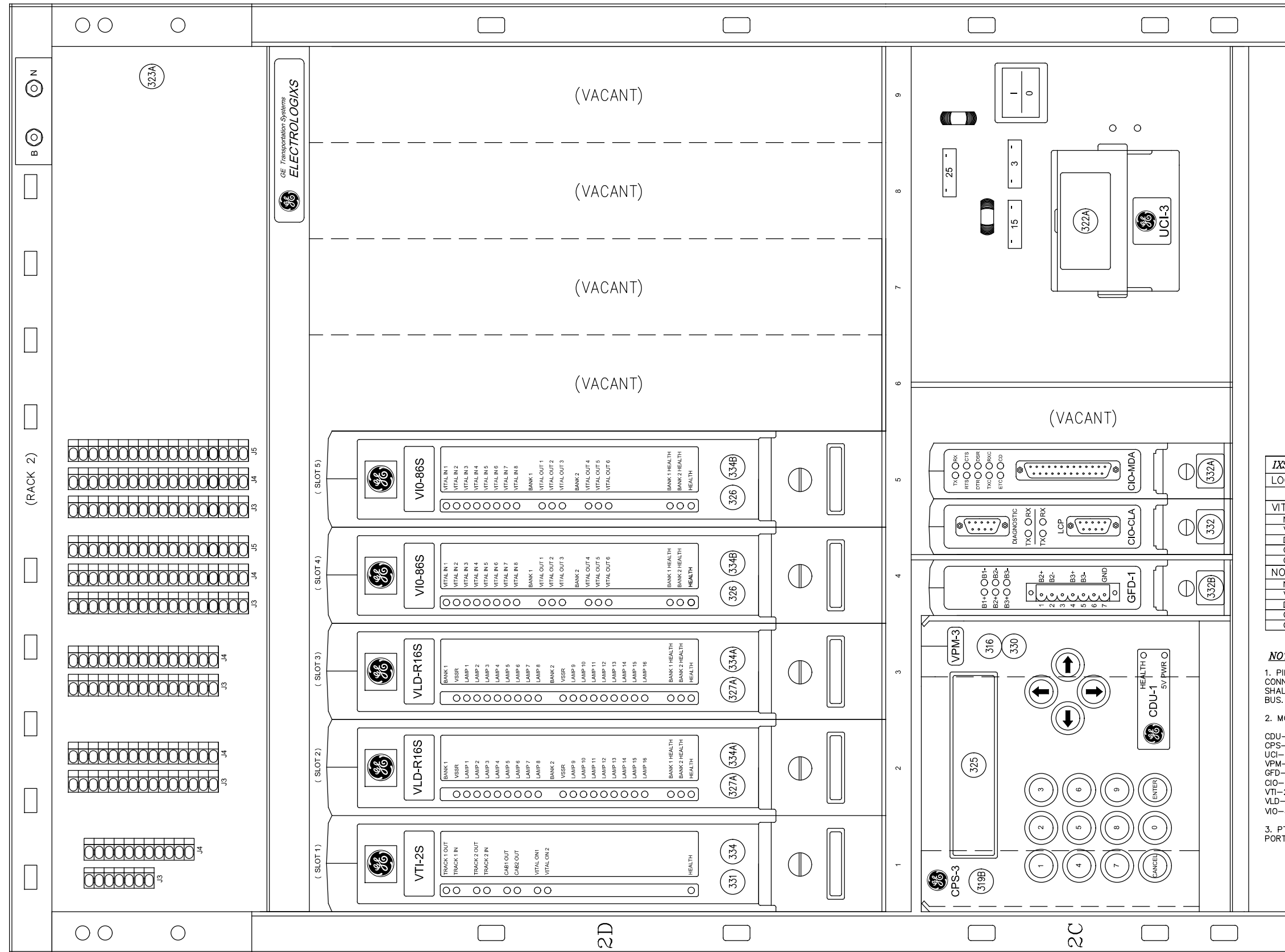


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NOT FOR CONSTRUCTION		SERIES CSGDT-15 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
ELECTROLOGIX WAYSIDE INTERFACE UNIT TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_814	SHEET
SCALE	AS NOTED	158 OF 248



CHASSIS ID

●	●	●	●	○	○	●
1	2	3	4	5	6	7

NOT PUNCHED = ON
PUNCHED = OFF

PROGRAM TIMERS	
OS LOSS-OF-SHUNT TIME LOCKING	10 SEC. 6 MIN. 04 SEC.

<i>IXS APPLICATION INFORMATION</i>	
LOCATION	
VITAL	
NAME	
VERSION	
DATE	
CHKSUM	
CRC	
NON-VITAL	
NAME	
VERSION	
DATE	
CHKSUM	
CRC	

NOTES:

1. PIN 7 ON GFD-1 MODULE TO BE CONNECTED TO GROUND. GROUND WIRE SHALL RUN TO BREAKER BOX GROUND BUS.

2. MODULE LEGEND:

CDU-1 - CONTROL DISPLAY UNIT
CPS-3 - CENTRAL POWER SUPPLY
UCI-3 - UNIVERSAL CHASSIS INFO
VPM-3 - VITAL PERIPHERAL MASTER
GFD-1 - GROUND FAULT DETECTOR
CIO-CLA - COMMUNICATION I/O
VTI-2S - VITAL TRACK INTERFACE
VLD-R16S - VITAL LAMP DRIVER
VIO-86S - VITAL INPUTS/OUTPUTS

3. PTC CONNECTION IS VIA ETHERNET
PORT ON VPM-3 MODULE



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NOT FOR CONSTRUCTION

SERIES
CSGDT-16 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

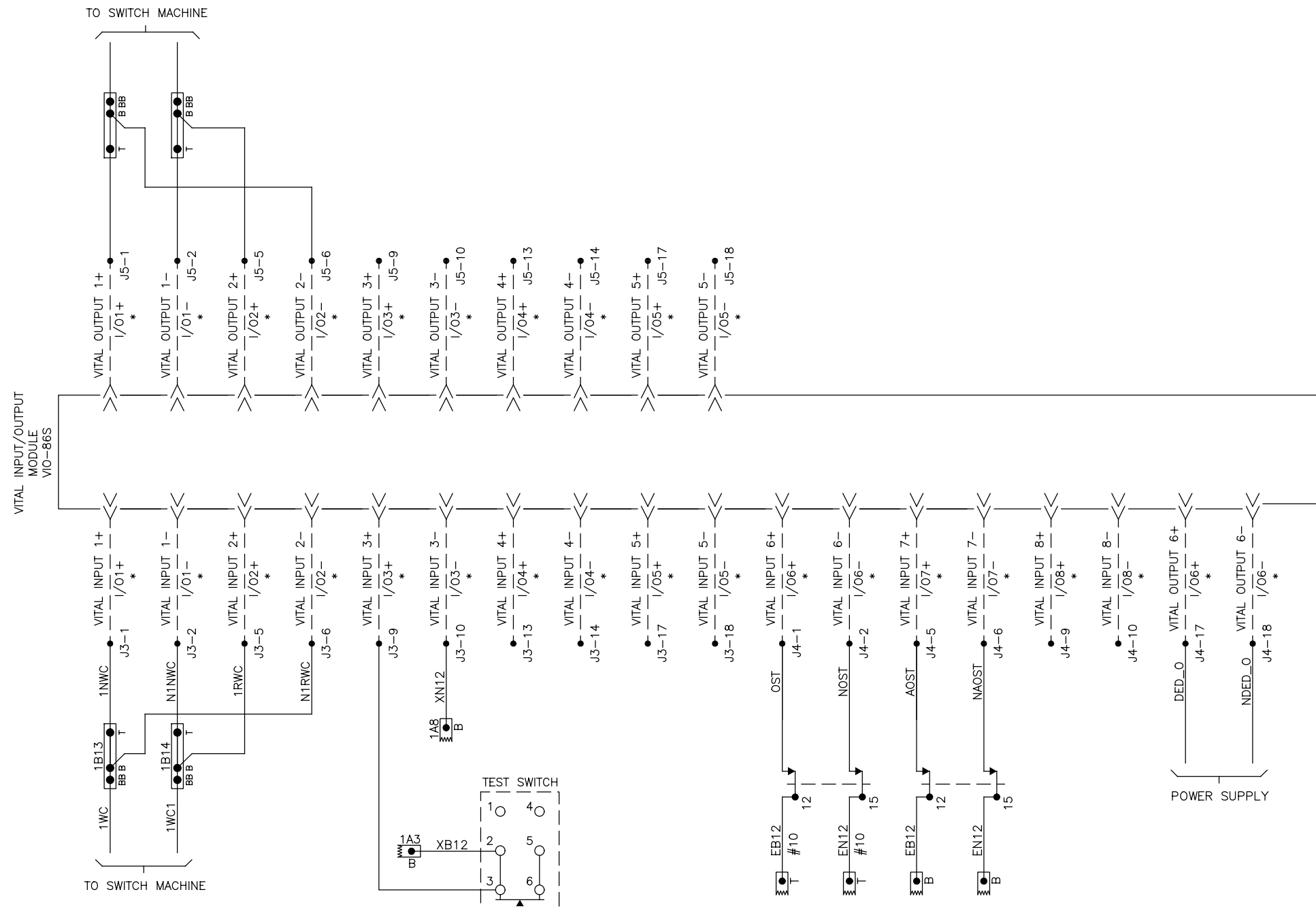
SINGLE TRACK

ELECTROLOGIX VITAL INPUT/OUTPUT MODULE TYPICAL SYSTEM

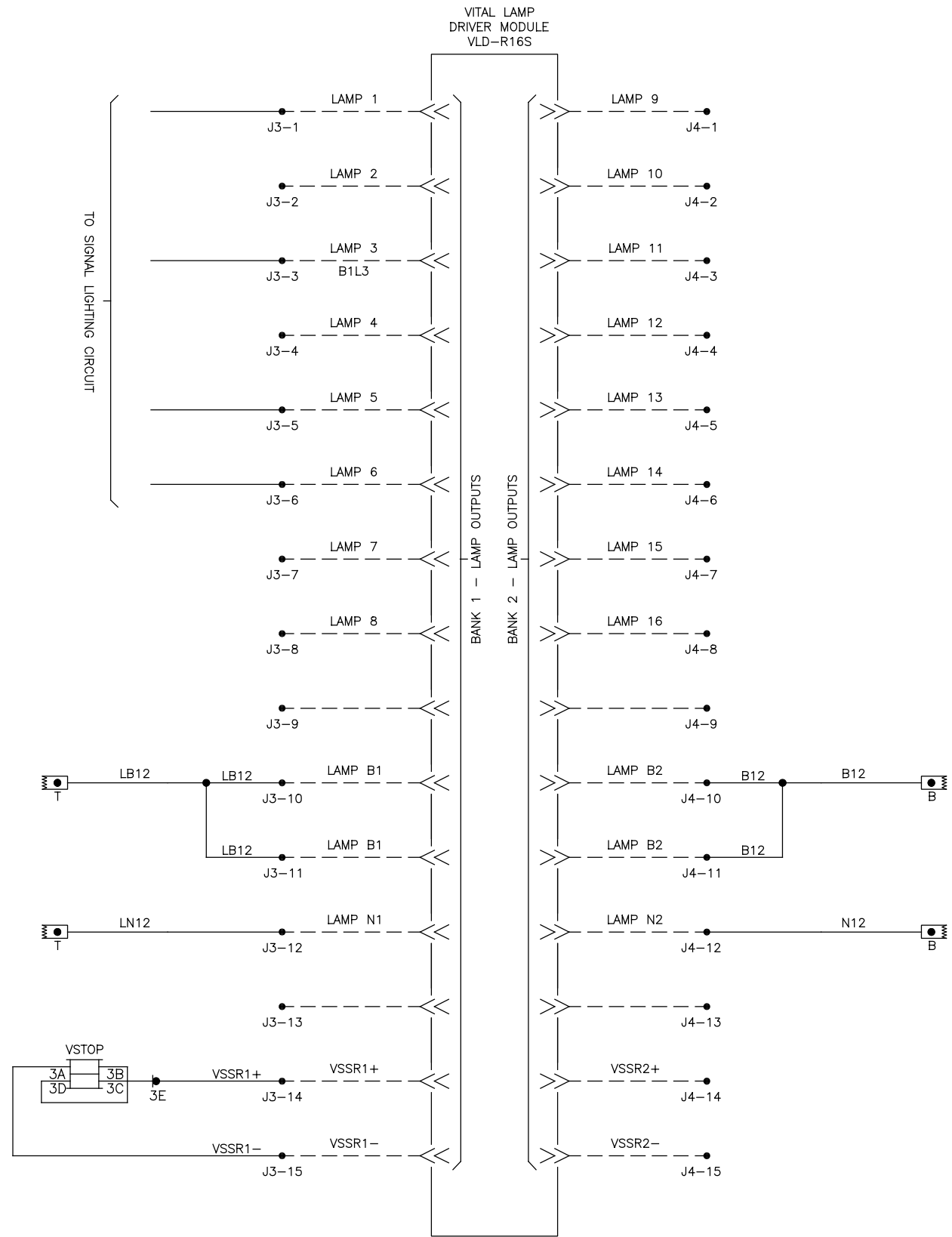
FILENAME	SHT_WL_CSIG_DET_815	SHEET 159 OF 248
SCALE	AS NOTED	

NOTES:

1. * = LABEL SHOWN ON BACK PLANE.
2. ALL WIRING #16 UNLESS OTHERWISE NOTED.



PLOT DATE: 7/19/2017 9:43:26 PM JKJELMA



NOTES:
1. ALL WIRING #16 UNLESS OTHERWISE NOTED.

NOT FOR CONSTRUCTION SERIES CSGDT-17 OF CSGDT-41



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NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		ELECTROLOGIX VITAL LAMP DRIVER MODULE TYPICAL SYSTEM	
FILENAME	SHT_WL_CSIG_DET_816	SHEET	
SCALE	AS NOTED	160 OF 248	

PLOT DATE: 7/19/2017 9:43:43 PM JKJELMA



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DATE:	07/21/17

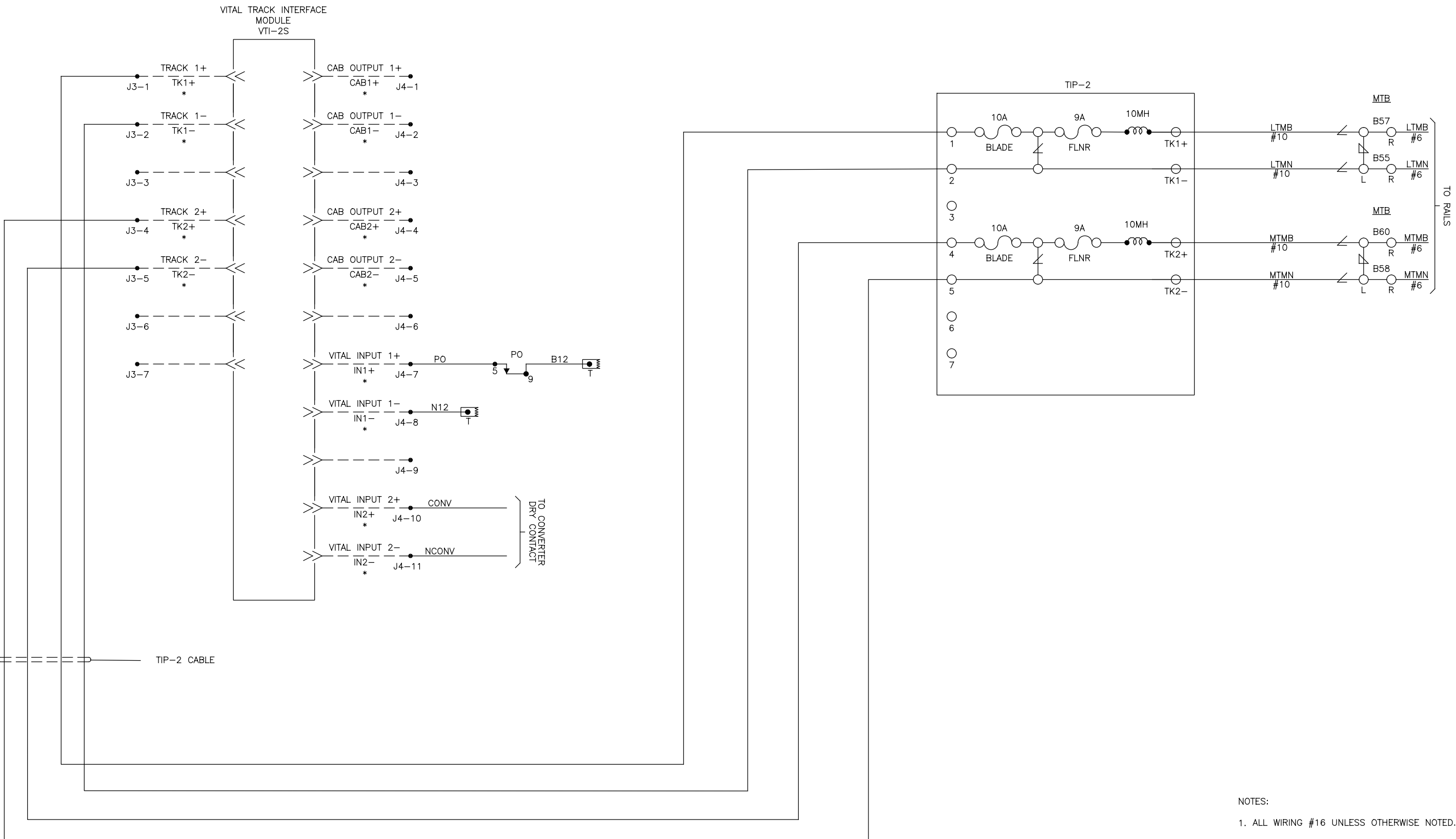
NOT FOR CONSTRUCTION

SERIES
CSGDT-19 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

ELECTROLOGIX VITAL
TRACK INTERFACE TYPICAL
SYSTEM

FILENAME	SHT_WL_CSIG_DET_818	SHEET
SCALE	AS NOTED	162 OF 248



NOTES:
1. ALL WIRING #16 UNLESS OTHERWISE NOTED.

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NOT FOR CONSTRUCTION		SERIES CSGDT-20 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
ELECTIFIED ELECTROCODE TRACK CKT AT INTERLOCKING SYSTEM		
FILENAME	SHT_WL_CSIG_DET_819	SHEET
SCALE	AS NOTED	163 OF 248

PLOT DATE: 7/21/2017 8:49:02 AM JKJELMA



ISSUE	DATE	DESCRIPTION



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DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES CSGDT-21 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
ELECTIFIED ELECTROCODE INTERMEDIATE TRACK CKT SYSTEM		
FILENAME	SHT_WL_CSIG_DET_820	SHEET
SCALE	AS NOTED	164 OF 248

PLOT DATE: 7/19/2017 9:44:10 PM JKJELMA



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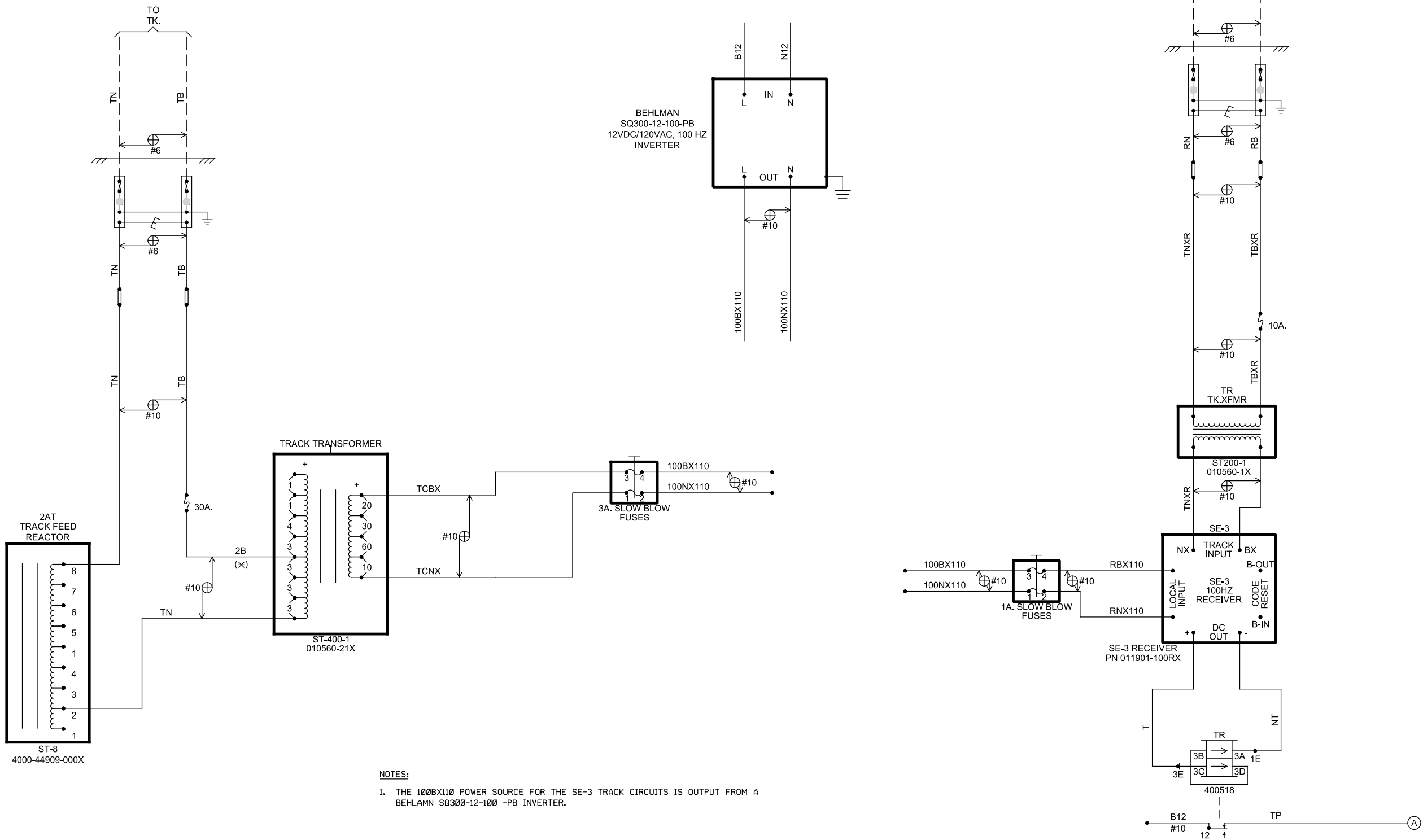
DESIGNED:	KT
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DATE:	07/21/17

NOT FOR CONSTRUCTION SERIES CSGDT-22 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

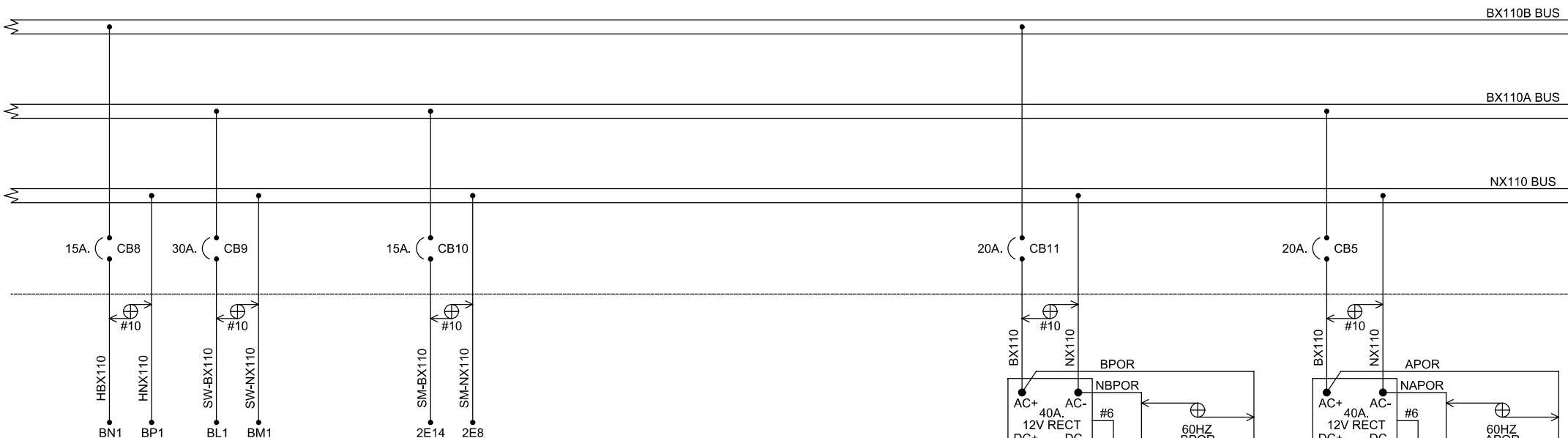
SE-3 TRACK CIRCUIT TYPICAL SYSTEM

FILENAME	SHT_WL_CSIG_DET_821	SHEET
SCALE	AS NOTED	165 OF 248

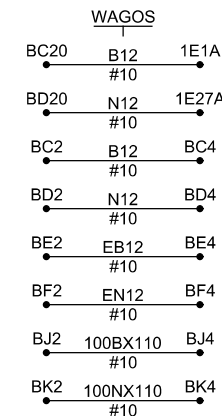
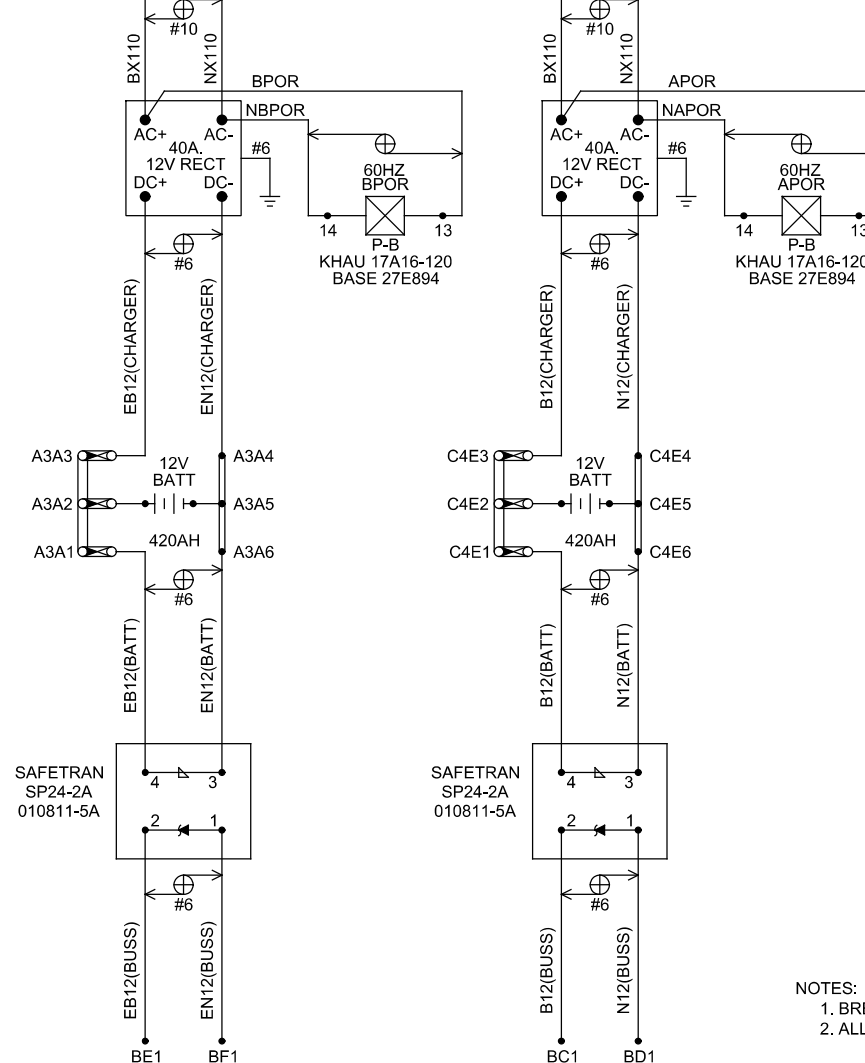


SEE
SHEET
29

BX110 BREAKER PANEL



100A.
AC SERVICE
BREAKER PANEL
240V



- NOTES:
1. BREAKERS ARE TO BE SQUARE D, QO TYPE.
 2. ALL WIRING TO BE #14 UNLESS OTHERWISE NOTED.

PLOT DATE: 7/19/2017 9:44:18 PM JKJELMA



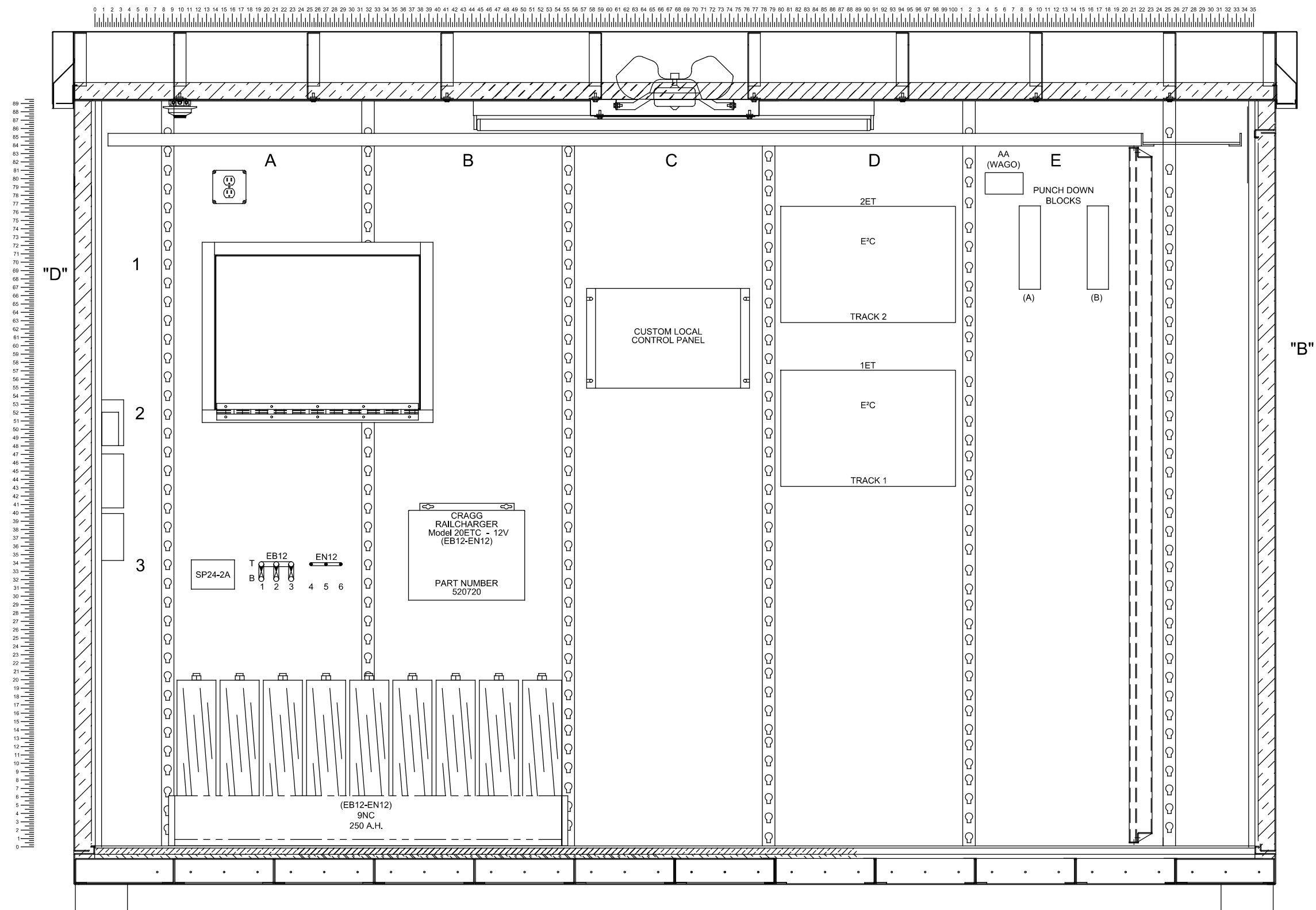
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ISSUE	DATE	DESCRIPTION



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NOT FOR CONSTRUCTION		SERIES
		CSGDT-23 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
CP POWER DIST TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_822	SHEET
SCALE	AS NOTED	166 OF 248



PLOT DATE: 7/19/2017
9:44:27 PM
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NOT FOR CONSTRUCTION

SERIES
CSGDT-24 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

CP BUNGALOW "A" WALL TYPICAL SYSTEM

FILENAME	SHT_WL_CSIG_DET_823	SHEET 167 OF 248
SCALE	AS NOTED	

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WEST LAKE

CORRIDOR

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DATE:	07/21/17

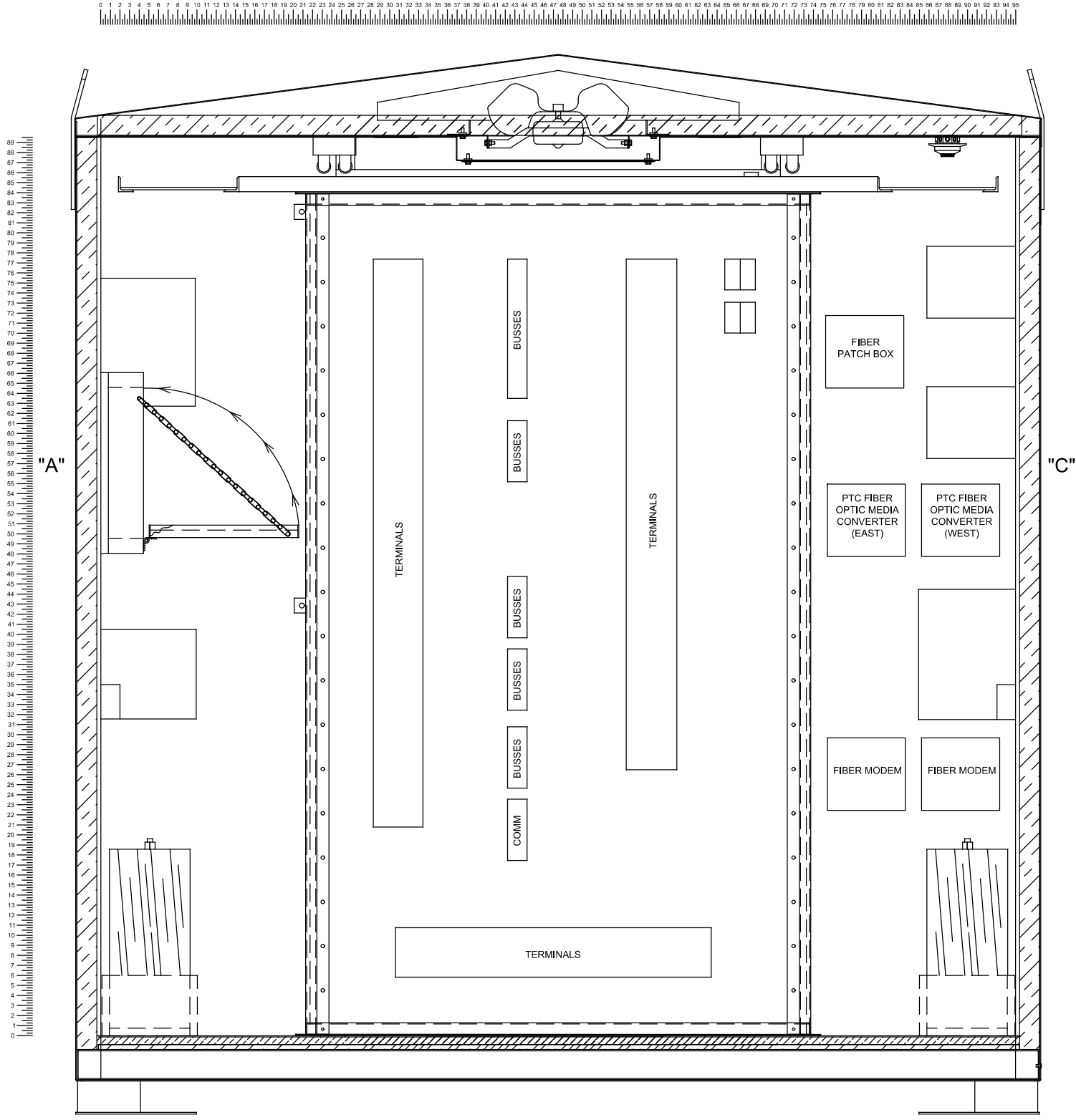
NOT FOR CONSTRUCTION

SERIES CSGDT-25 OF CSGDT-41

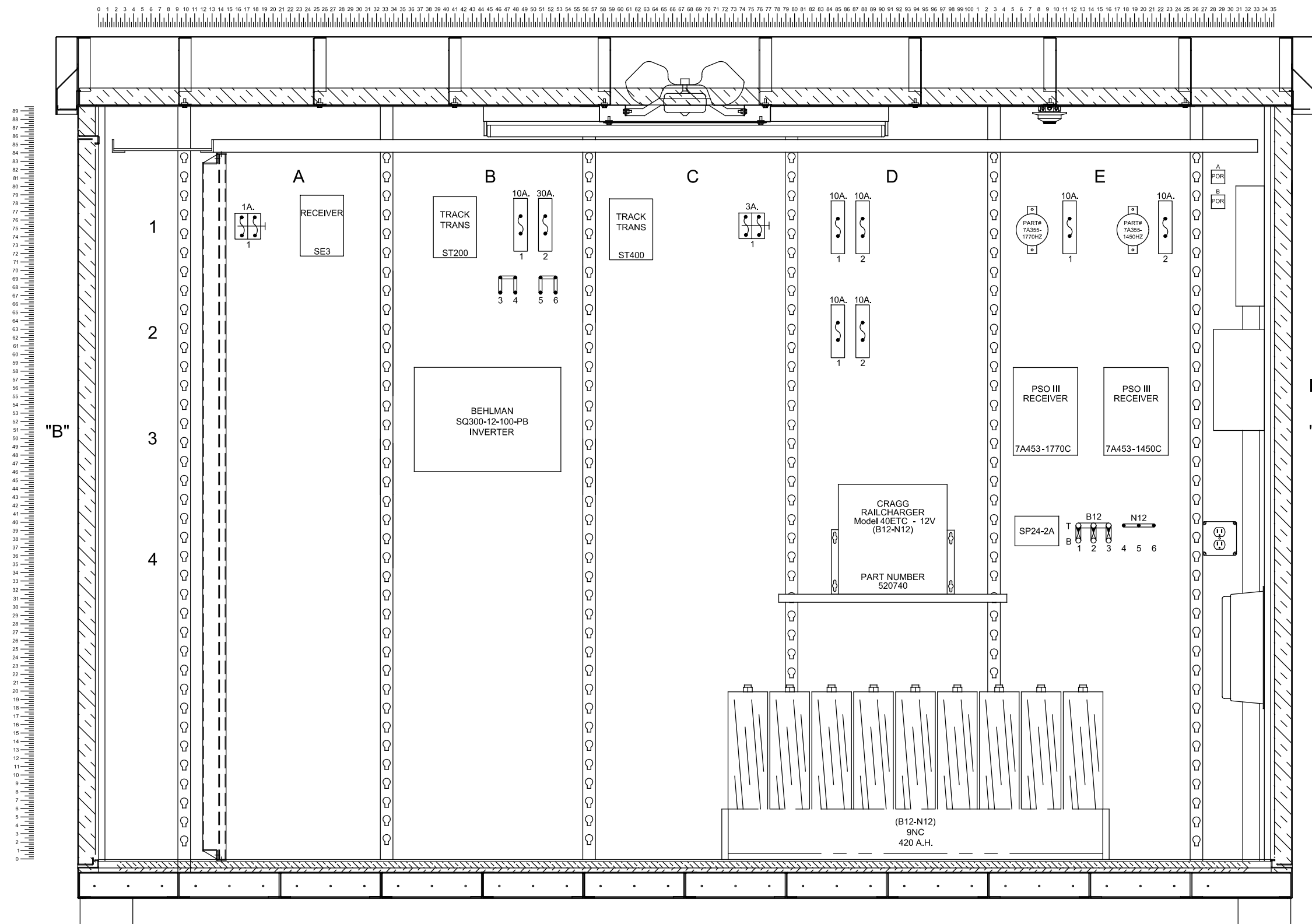
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

CP BUNGALOW "B" WALL TYPICAL SYSTEM

FILENAME	SHT_WL_CSIG_DET_824	SHEET
SCALE	AS NOTED	168 OF 248



INTERIOR VIEW OF "B" WALL



INTERIOR VIEW OF "C" WALL

"D"



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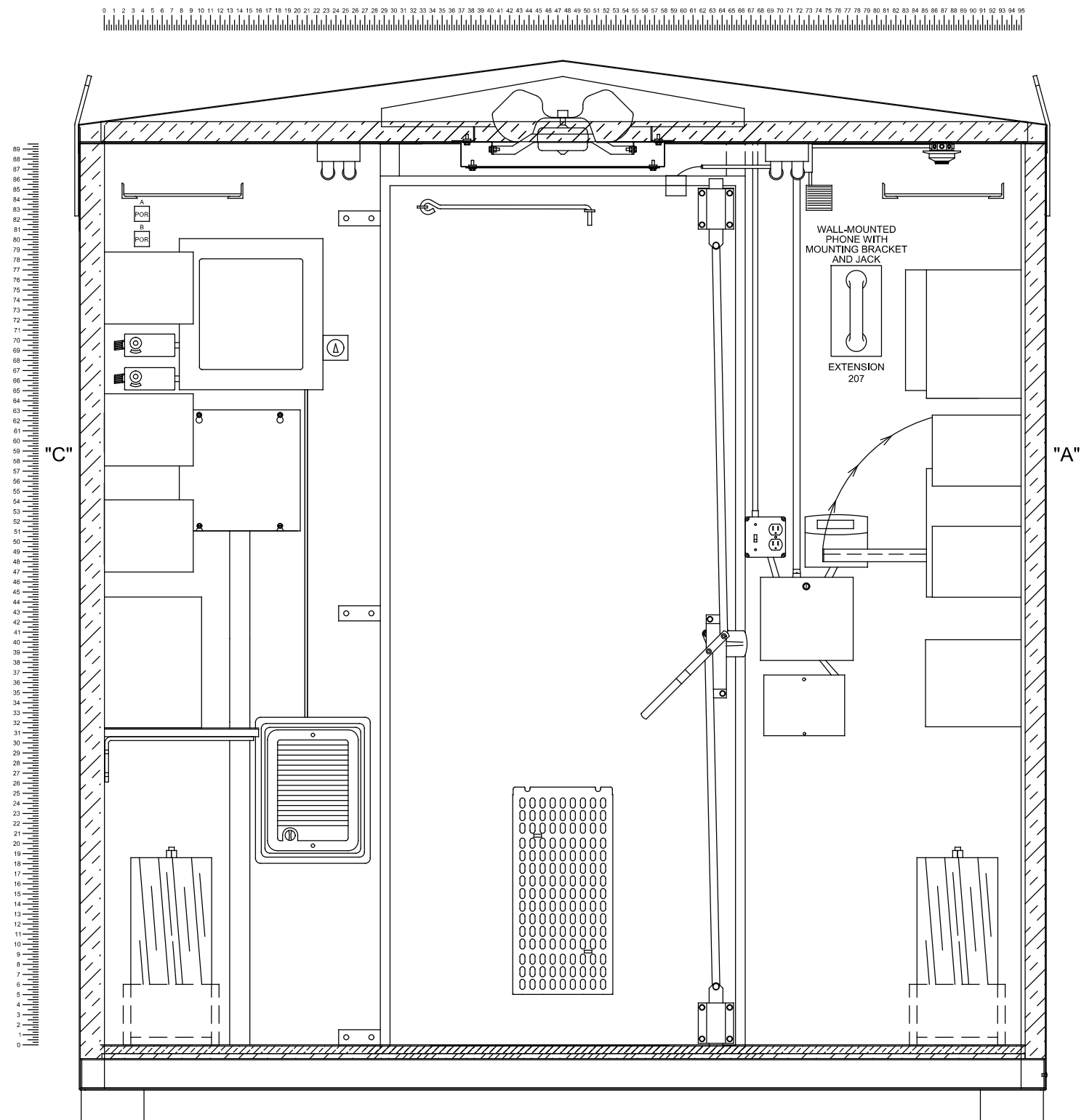
NOT FOR CONSTRUCTION

SERIES
CSGDT-26 OF CSGDT-41

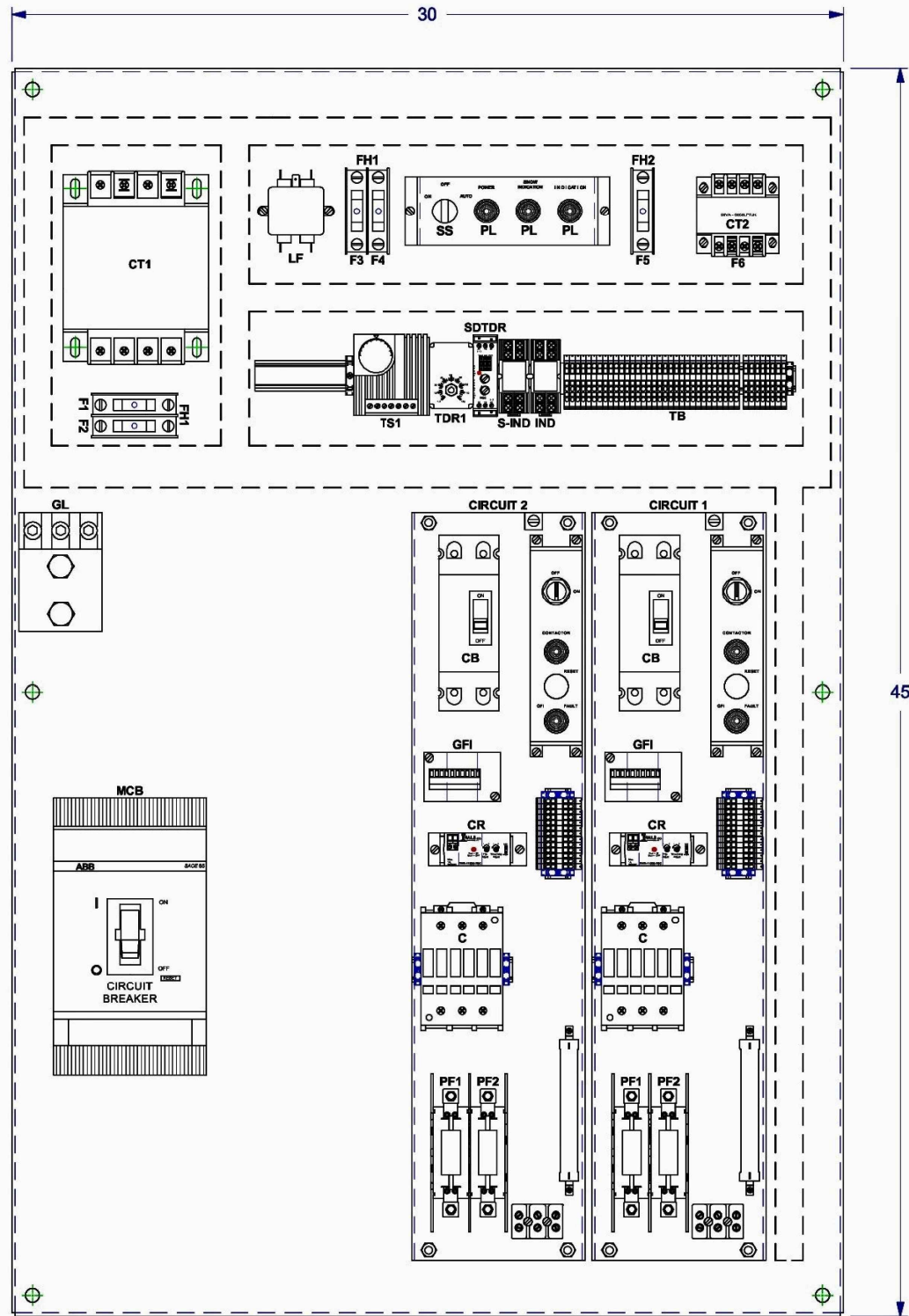
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

CP BUNGALOW "C" WALL TYPICAL SYSTEM

FILENAME	SHT_WL_CSIG_DET_825	SHEET
SCALE	AS NOTED	169 OF 248

[illegible]

DESIGNED:	KT
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DATE:	07/21/17



BILL OF MATERIAL (MAIN PANEL)			
ITEM	RAILS P/N	DESCRIPTION	QTY
	THR-11519-1	ENCLOSURE, 36 x 48, W/ 3-POINT LATCH, 304SS	1
	THR-11519-2	BACK PANEL, STEEL, 33 x 45	1
MCB1	HAB-10335-17A	BREAKER, CIRCUIT, 400 AMP, 480VAC, 2 POLE, ADJ.	1
CT1	THR-11520-1	TRANSFORMER, 750VA, 480/120 VAC	1
LF	HD-10123-6	FILTER, LINE, POWER, RFI, 10 AMP	1
CT2	HAB-10938-1	TRANSFORMER, 115/24 VOLTS, AC, 50VA	1
GL	HD-10043-4	TERMINAL, UNIVERSAL, 3 COND. (GROUND LUG)	1
TDR1	HAB-6179	RELAY, 120 VAC, DELAY ON OPERATE	1
	HAB-8670	SOCKET, RELAY, 8 PIN	1
	HD-9642-2	SOCKET, DPDT, BLADE TYPE	2
IND	HD-10572-4	RELAY, 120VAC, DPDT	2
SD-TDR	THR-11521-1	RELAY, SOLIDSTATE, TIME DELAY, 0.5sec. - 999hrs.	1
SS	HD-9849-1	SWITCH, SELECTOR, 3 POSITION	1
	THR-11528-1	BRACKET, CONTROL, SWITCH, 4 HOLES	1
	THR-11526-1	PLATE, LEGEND, CONTROL SWITCH	1
PL	HAB-9718-1	LIGHT, PILOT, GREEN, LED	2
PL	HAB-9718-2	LIGHT, PILOT, RED, LED	1
TB	THR-11515-3	TERMINAL BLOCK, 3 WIRE, PUSH-IN	42
FH1	HD-9236-2	HOLDER, FUSE, 2 POLE	2
FH2	HD-9236-1	HOLDER, FUSE, 1 POLE	1
F1,F2,F6	THR-11511-2	FUSE, 2 AMP, 600V, TIME DELAY	3
F3	THR-11511-6	FUSE, 6 AMP, 600 VAC, TIME DELAY	1
F4	THR-11511-1	FUSE, 1 AMP, 600 VAC, TIME DELAY	1
F5	THR-11511-4	FUSE, 4 AMP, 600 VAC, TIME DELAY	1
	HD-9234	RAIL, MOUNTING	A/R
	HD-9234-01	CLIP, END DIN RAIL	2
	HD-10240-7	WIRE DUCT, 1 x 2-1/4	A/R
	HD-10240-13	WIRE DUCT, 1-1/2 x 2-1/4	A/R
H1	HAB-10895-2	HEATER, 100WATTS	1
TS1	THR-10606-2	THERMOSTAT, 120VAC	1
	HD-11527-2	WIRE, 2 AWG, 1kV, DIESEL LOCOMOTIVE	A/R
	HD-10975-2071	WIRE, 14 AWG, 2kV	A/R

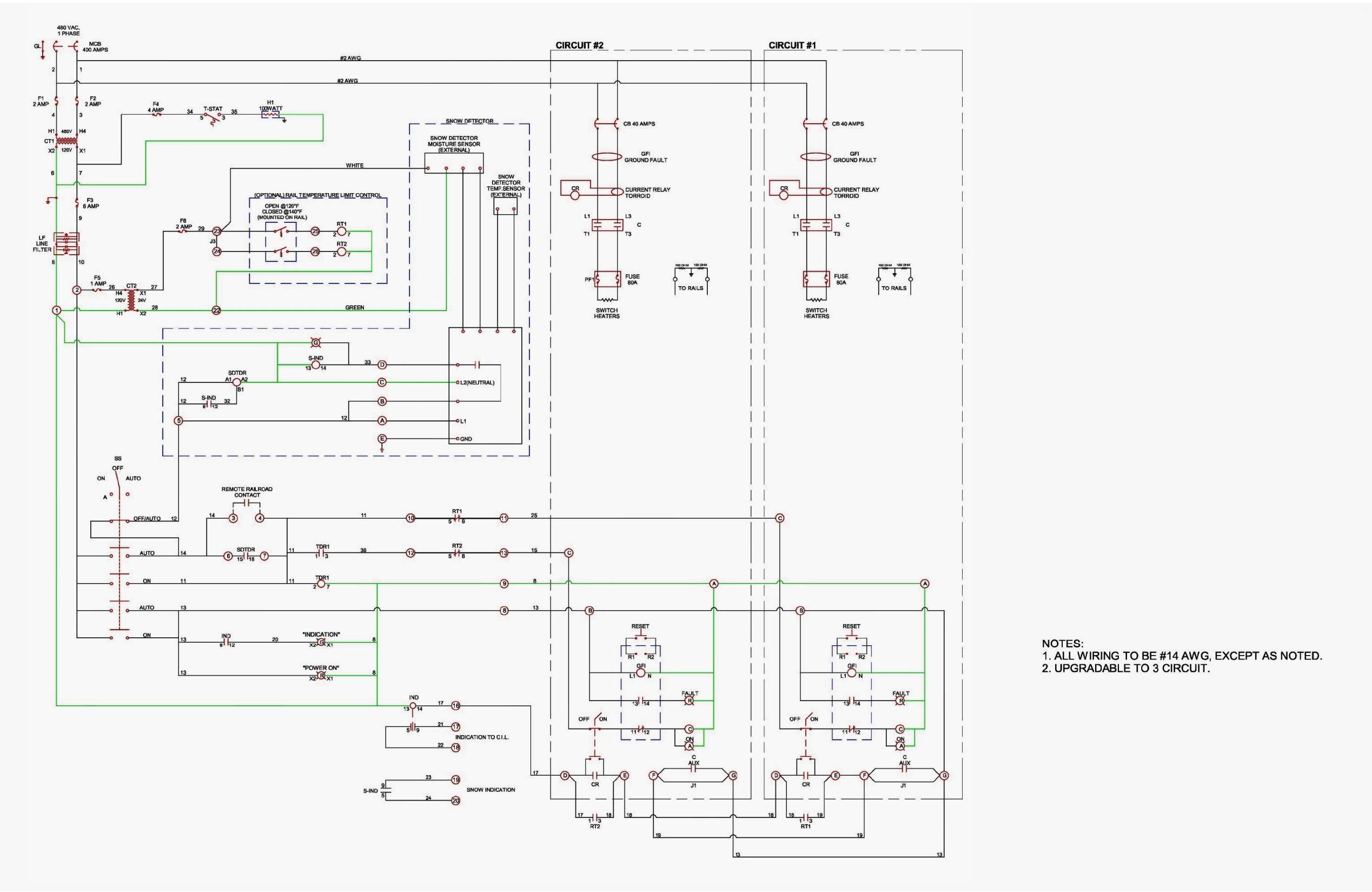
BILL OF MATERIAL (PER SUB-PANEL)			
ITEM	RAILS P/N	DESCRIPTION	QTY
	THR-11522-001	PANEL, SUB 27 x 6-1/4	1
CB	THR-10639-62	BREAKER, CIRCUIT, 40 AMP, 480VAC, 2 POLE	1
	THR-11523-1	BRACKET, TH, CONTROL, SWITCH	1
C	THR-11510-22	CONTACTOR, 3 POLE, 90 AMPS	1
	THR-11510-102	CONTACT, AUXILIARY, 1 POLE N/O	1
	THR-11514-1	HOLDER, FUSE, 2 POLE, NH00	1
PF1,PF2	THR-11512-80	FUSE, NH00,TYPE AM, 80 AMPS, W/ INDICATOR	2
SS1	HD-9849-3	SWITCH, SELECTOR, 2 PO., 2 CONTACTS, N/O & N/C	1
PB2	HD-9640	PUSHBUTTON, N/O, 7/8 DIA. GREEN, 1 CONTACT	1
PL	HAB-9718-2	LIGHT, PILOT, RED, LED	1
PL	HAB-9718-3	LIGHT, PILOT, AMBER, LED	1
	THR-11515-2	TERMINAL BLOCK	10
	HD-10042-100	RESISTOR, 100 OHMS, 100 WATTS WIRE WOUND, 5%	2
	HD-10042-MB	BRACKET, MOUNTING, RESISTOR 100 WATTS TYPE	2
	HAB-9394-2	TERMINAL, STRIP OF 3 TERMINALS	1
GFI	CAB-11500-1	SENSOR, GROUND FAULT, AC	1
	HD-9234	RAIL, MOUNTING	A/R
	HD-9234-01	CLIP, END DIN RAIL	4
CR	THR-11036-2SC	SENSOR, CURRENT	1

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NOT FOR CONSTRUCTION		SERIES	CSGDT-28	OF	CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK					
SNOW MELTER CONTROL PANEL TYP SYSTEM					
FILENAME	SHT_WL_CSIG_DET_827	SHEET	171	OF	248
SCALE	AS NOTED				



NOTES:
1. ALL WIRING TO BE #14 AWG, EXCEPT AS NOTED.
2. UPGRADABLE TO 3 CIRCUIT.

PLOT DATE: 7/19/2017 9:45:31 PM JKJELLM



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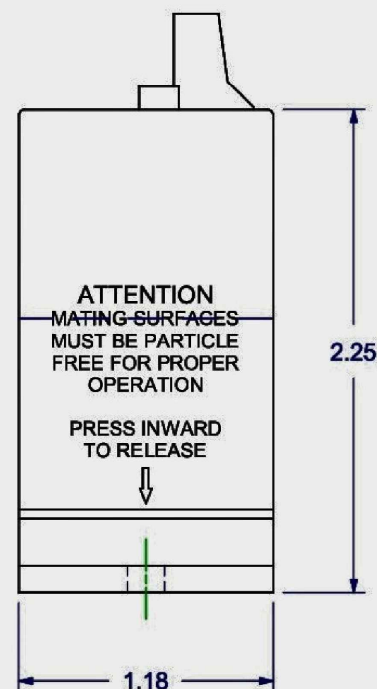
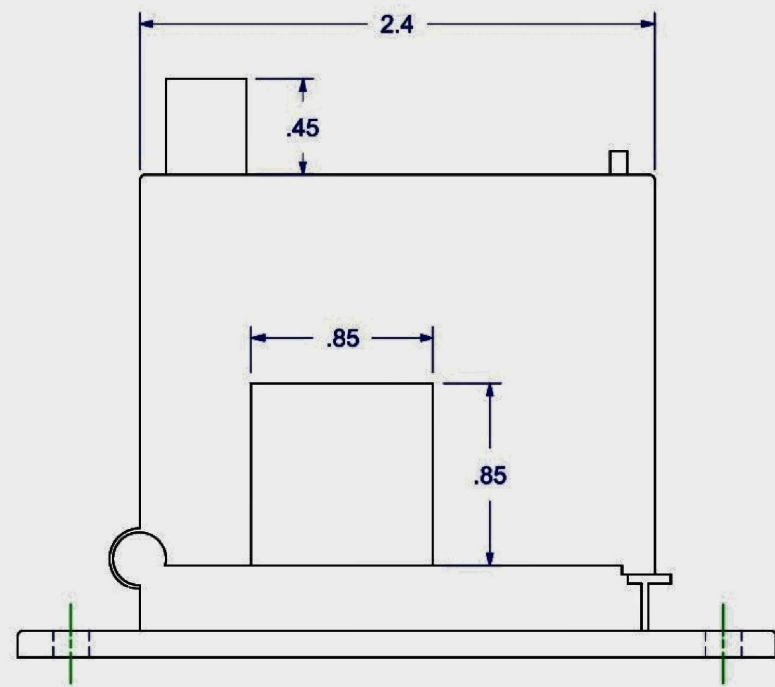
NOT FOR CONSTRUCTION

SERIES CSGDT-29 OF CSGDT-41

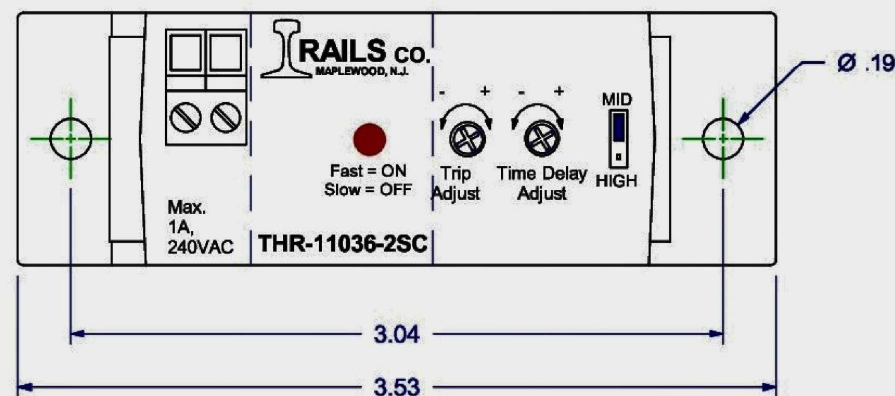
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

SNOW MELTER CON CKT DIAGRAM TYP
SYSTEM

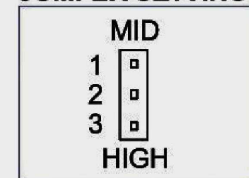
FILENAME	SHT_WL_CSIG_DET_828	SHEET
SCALE	AS NOTED	172 OF 248



SPECIFICATIONS:				
POWER SUPPLY	NONE - SELF-POWERED			
OUTPUT	ISOLATED SOLID STATE SWITCH			
OUTPUT RATING	1A @ 240VAC, IN FREE AIR			
OFF STATE LEAKAGE	< 10µA			
RESPONSE TIME	0.120 TO 15 SECONDS ADJUSTABLE			
SETPOINT RANGE	2-12A, 12-55A & 50-200A			
SETPOINT ADJUST	4 TURN POTENTIOMETER			
RESPONSE TIME ADJUST	4 TURN POTENTIOMETER			
HYSTERESIS	5% CONSTANT			
	RANGE	CONTINUOUS	6 SEC	1 SEC
	2-12A	150A	400A	600A
	12-55A	150A	400A	800A
OVERLOAD	50-200A	150A	400A	1200A
ISOLATION VOLTAGE	5,000VAC			
FREQUENCY RANGE	50 - 100Hz			
SENSING APERTURE	0.85" SQUARE			
CASE	UL 94V-0 FLAMMABILITY RATED			
ENVIRONMENTAL	-58° TO +149°F(-50 TO 65°C), 0-95% RH, NON-CONDENSING CONFORMALLY COATED			



JUMPER SETTING



LOW = NO JUMPER (2 - 12A)
MID = PIN 1 & 2 (12-55A)
HIGH = PIN 2 & 3 (50-200A)

OPERATIONS

MONITORED AMPS	OUTPUT	LED
NONE OR BELOW RANGE	OPEN	OFF
BELOW TRIP LEVEL	OPEN	SLOW (2 Sec)
ABOVE TRIP LEVEL	CLOSED	FAST (0.5 Sec)

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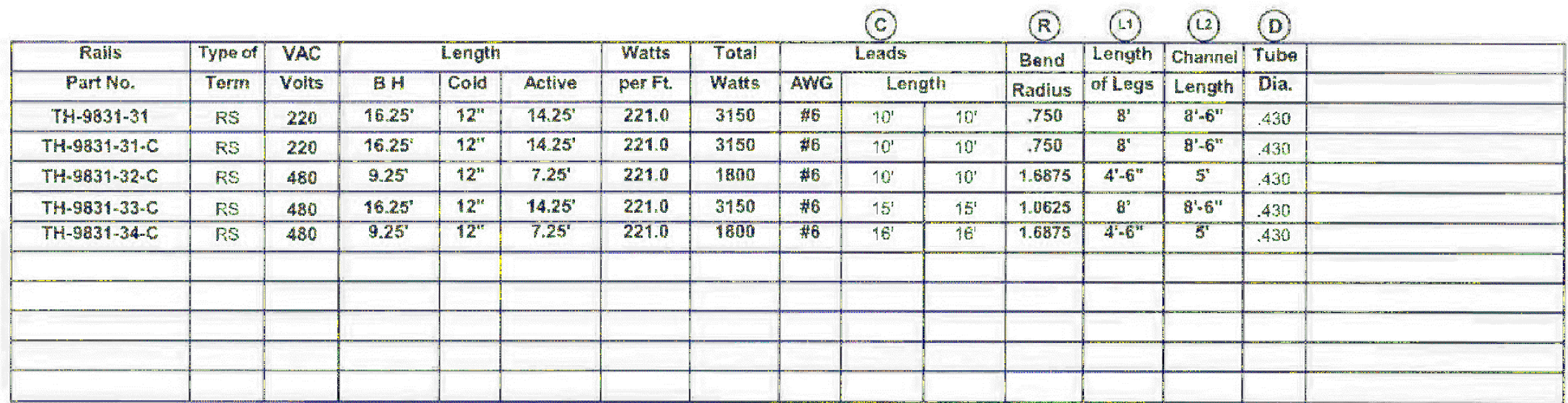
ISSUE	DATE	DESCRIPTION



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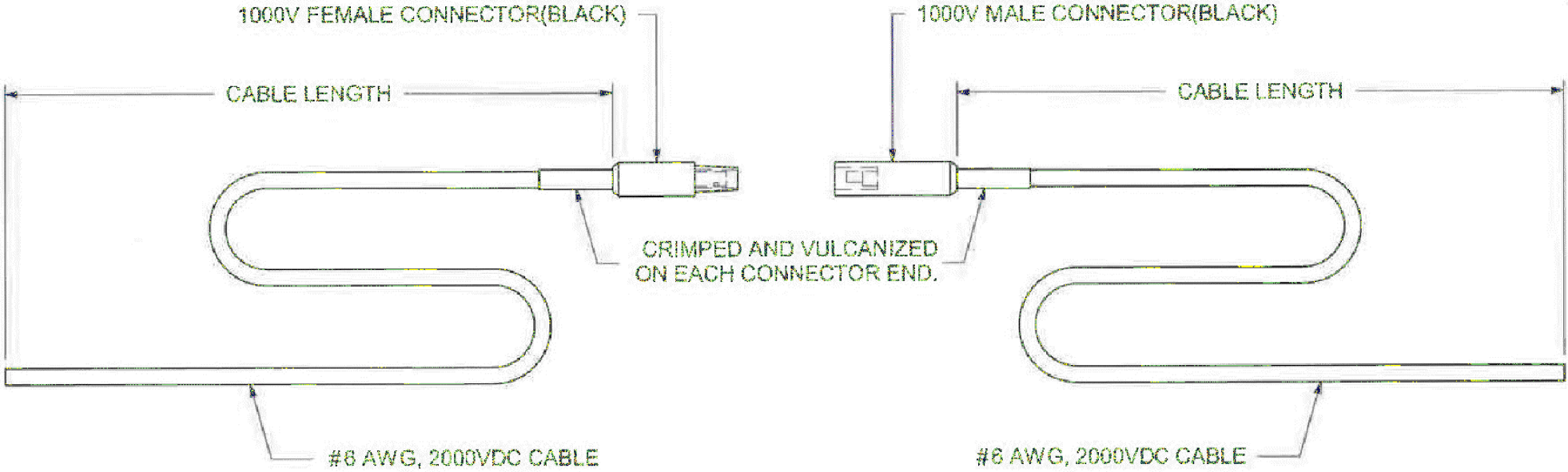
NOT FOR CONSTRUCTION		SERIES CSGDT-30 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
SNOW MELTER CONT SWITCH TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_829	SHEET
SCALE	AS NOTED	173 OF 248

Rev	Date	Description	Req	App
A	11-29-04	Added -32-c, optional QD, channel length	DGB:dgb	DGB
B	12-07-04	Added -33-c	EF:ea	EF
C	03-15-05	Added side view; revised clip	EF:ea	EF
D	03-21-05	-32-c bend radius was 2.0625	EF:ea	EF
E	09-27-07	Added -34-C	EF:ea	EF



PART NO.	TERMINAL TYPE & DIA.	CABLE LENGTH	TOL. IN LENGTH
TH-10858-1	MALE & FEMALE(ASS'Y) - 11/16"	2' each end	- 0 + 5%
TH-10858-1M	MALE - 11/16"	2'	
TH-10858-1F	FEMALE - 11/16"	2'	
TH-10858-10M	MALE - 11/16"	10'	
TH-10858-10F	FEMALE - 11/16"	10'	
TH-10858-3F	FEMALE - 11/16"	3'	
TH-10858-3M	MALE - 11/16"	3'	
TH-10858-20M	MALE - 11/16"	20'	
TH-10858-20F	FEMALE - 11/16"	20'	
TH-10858-100F	FEMALE - 11/16"	100'	
TH-10858-15F	FEMALE - 11/16"	15'	

Rev	Date	Description	Req	App
A	2-07-01	Added Tol. in Length to Table.	ea	GAL
B	07-31-02	Added -10M,-10F	LC	LC
C	07-08-03	Redrawn for 11/16" terminal only	LC:bwa	LC
D	09-03-03	Updated drawing	LC:ea	DHM
E	02-17-04	Added -3F,3M	EF:ea	EF
F	10-15-04	Updated specs. & disconnect rating	EF:ea	EF
G	09-14-05	2000VDC cable was 1000VDC cable	EF:dgb	EF
H	09-19-05	1000VDC cable was 2000VDC cable	EF:dgb	EF
I	12-23-09	2000VDC cable was 1000VDC cable	EF:dgb	EF
J	07-23-13	Added -20F,-20M	EF:ea	EF
K	02-24-14	Added -100F	EF:ea	EF
L	10-21-14	Added -15F	RD:ea	RD



SPECIFICATION:
VOLTAGE: 1000VDC
AMPS: 80A

PLOT DATE: 7/19/2017 9:46:20 PM JKELLMA



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SERIES CSGDT-33 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

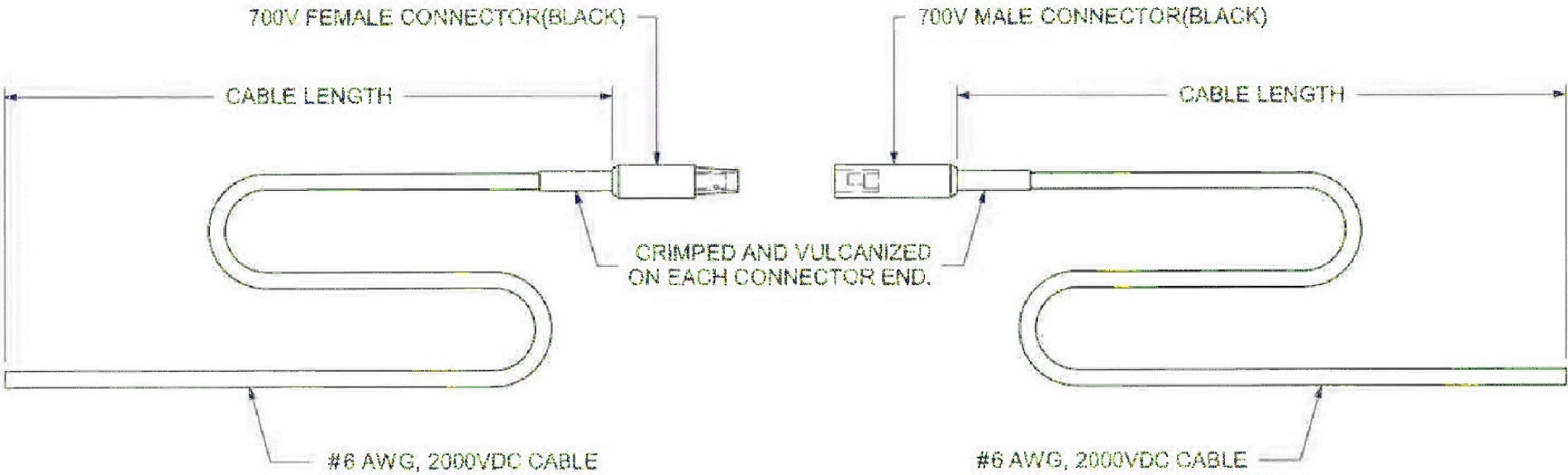
SNOW MELTER SINGLE POLE CONNECTOR 11/16" TYPICAL SYSTEM

FILENAME SHT_WL_CSIG_DET_832
SCALE AS NOTED

SHEET 176 OF 248

PART NO.	TERMINAL TYPE & DIA.	CABLE LENGTH	TOL. IN LENGTH
TH-10857-1	(ASS'Y) MALE & FEMALE - 7/8"	2' each end	
TH-10857-1M	MALE - 7/8"	2'	
TH-10857-1F	FEMALE - 7/8"	2'	
TH-10857-10M	MALE - 7/8"	10'	
TH-10857-10F	FEMALE - 7/8"	10'	- 0
TH-10857-13M	MALE - 7/8"	13'	+ 5%
TH-10857-13F	FEMALE - 7/8"	13'	
TH-10857-20M	MALE - 7/8"	20'	
TH-10857-20F	FEMALE - 7/8"	20'	
TH-10857-25F	FEMALE - 7/8"	25'	

Rev	Date	Description	Req	App
A	07-11-00	ADDED TH-10857-10F & 10M		
B	10-19-00	ADDED TH-10857-13M & 13F	LC:ea	
C	2-07-01	Added Tol. in Length to Table.	ea	GAL
D	07-08-03	Redrawn for 7/8 terminal only	LC:bwa	LC
E	09-03-03	Updated drawing	LC:ea	DHM
F	09-14-05	2000VDC cable was 1000VDC cable	EF:dgb	EF
G	09-19-05	1000VDC cable was 2000VDC cable	EF:dgb	EF
H	09-19-06	Added -20M, -20F	EF:dgb	EF
I	12-23-09	2000VDC cable was 1000VDC cable	EF:dgb	EF
J	10-21-10	Added -25F	EF:DW	EF



SPECIFICATION:
VOLTAGE: 700 vdc
AMPS: 150

PLOT DATE: 7/19/2017 9:46:31 PM JKELLMA



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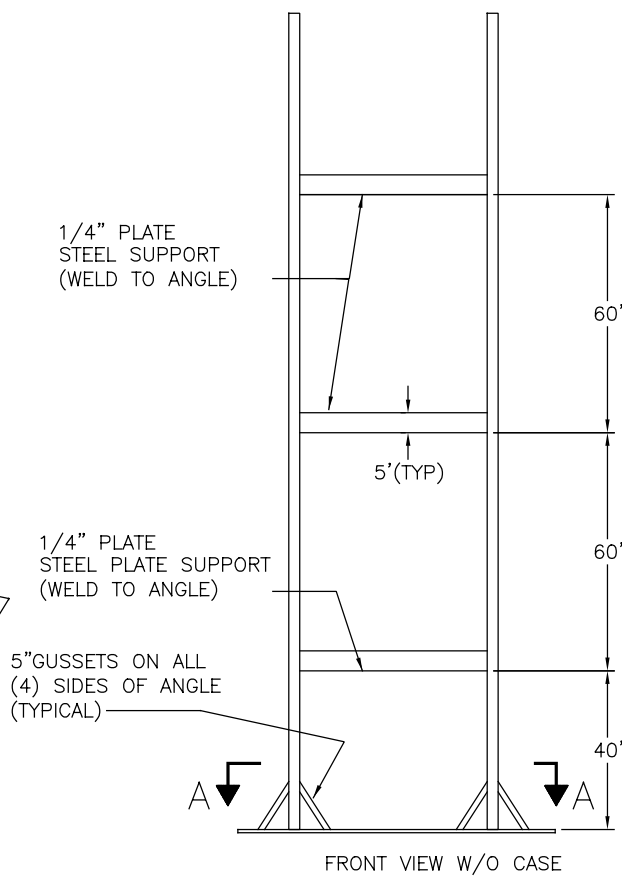
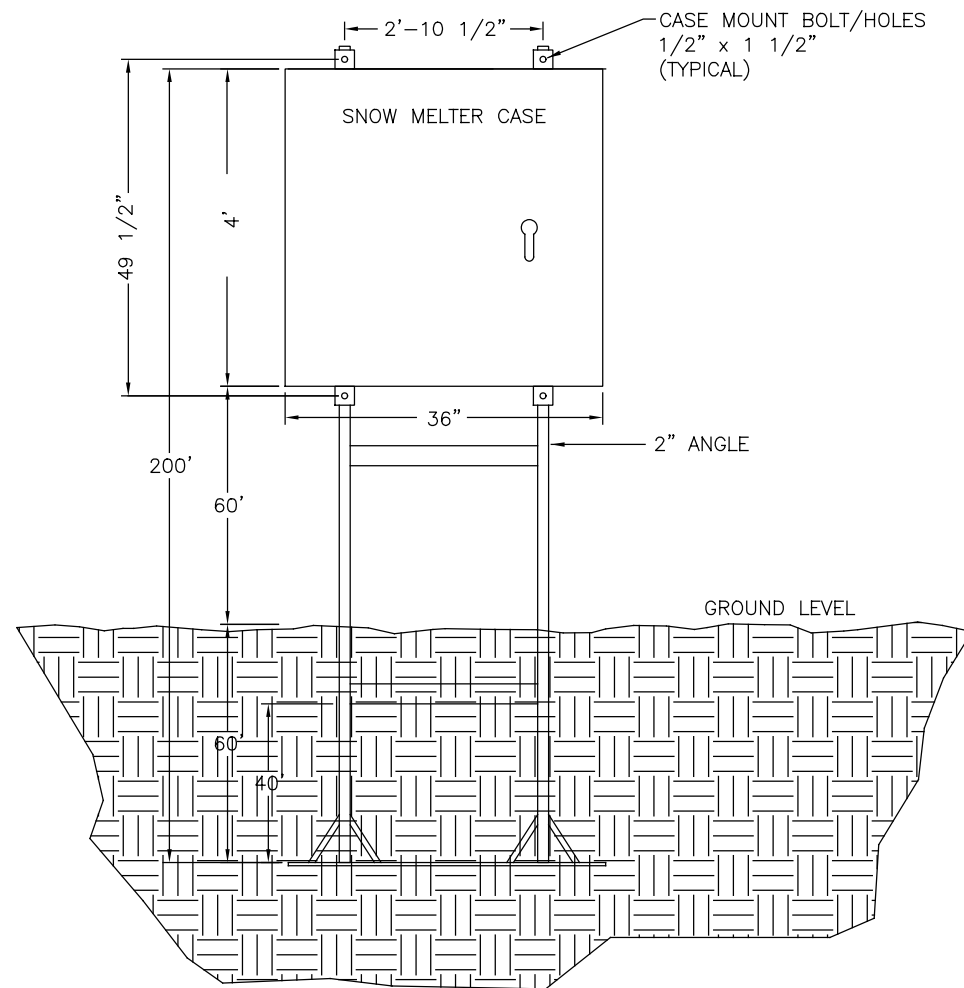
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TRANSPORTATION DISTRICT
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Chesterton, Indiana 46304



DYER TO HAMMOND, INDIANA

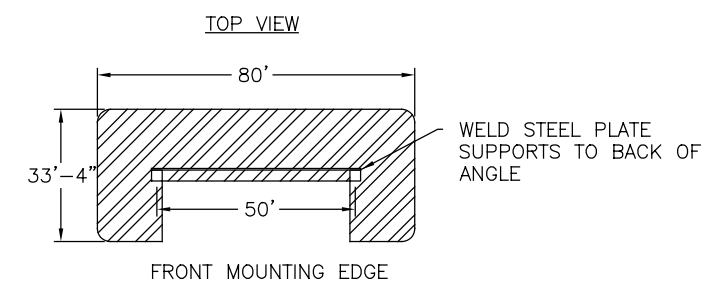
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DRAWN:	KT
CHECKED:	MJP
DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES CSGDT-34 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
SNOW MELTER SINGLE POLE CONNECTOR 7/8" TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_833	SHEET
SCALE	AS NOTED	177 OF 248

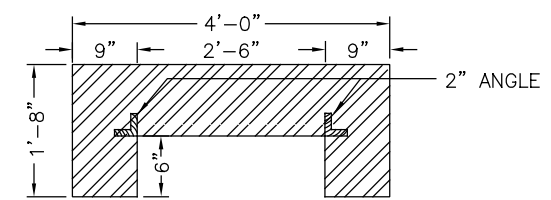


NOTES:

1. ALL METAL SURFACES TO BE GALVANIZED
2. ANGLE TO BE 2"x1/4"



SECTION A-A



SNOW MELTER CASE FOUNDATION
"BOTTOM PLATE DETAIL"

SECTION B-B

NOT FOR CONSTRUCTION

SERIES
CSGDT-35 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

SNOW MELTERCASE DETAIL TYPICAL SYSTEM

FILENAME
SCALE

SHT_WL_CSIG_DET_834
AS NOTED

SHEET

178 OF 248



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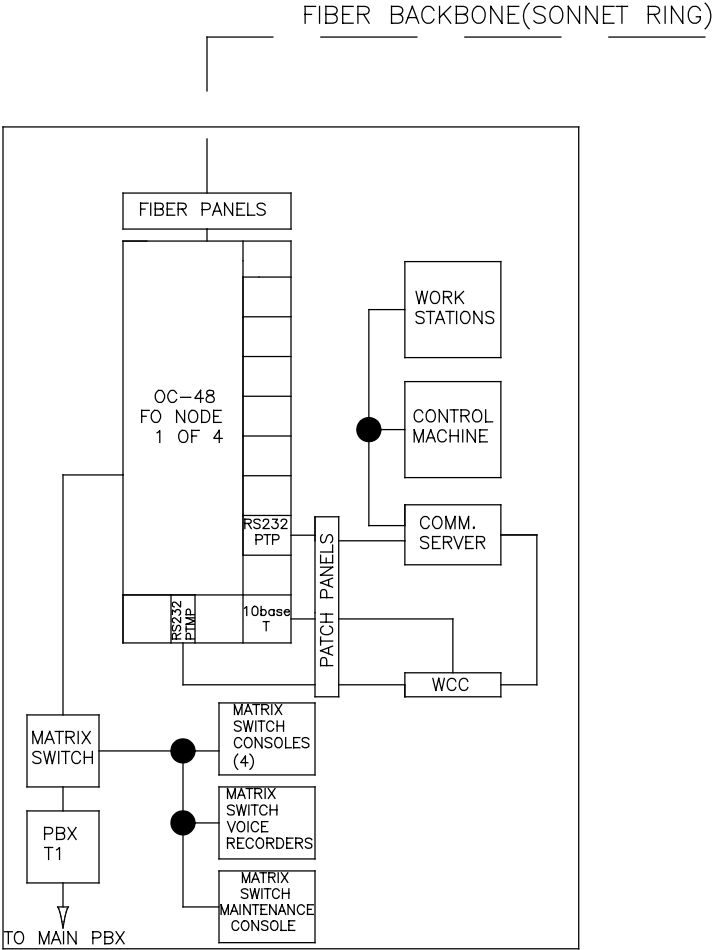
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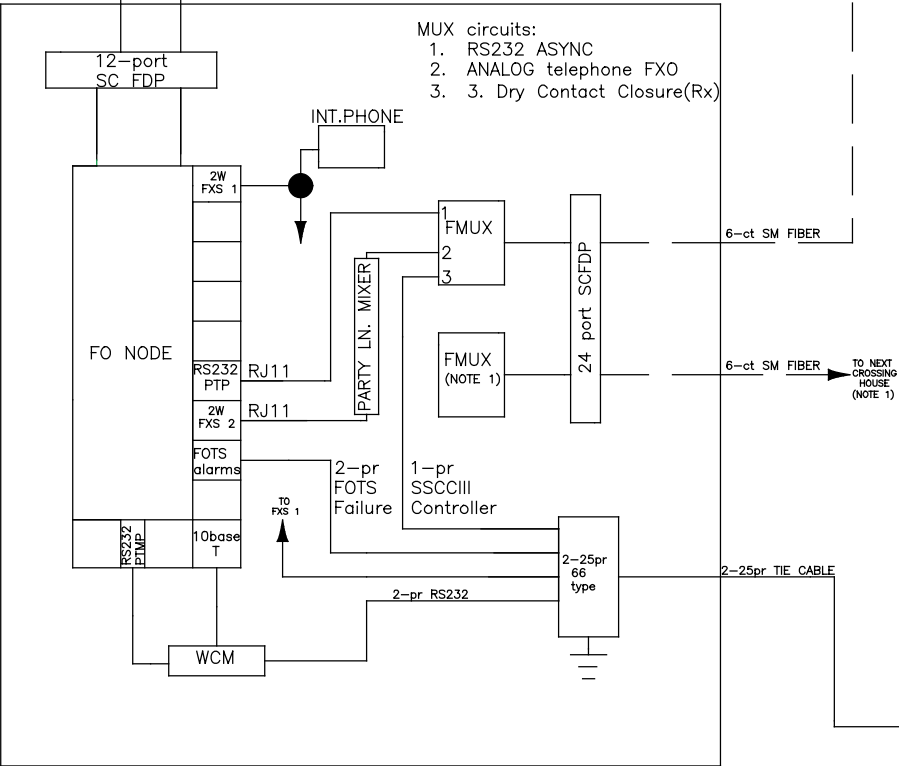
DYER TO HAMMOND, INDIANA

DESIGNED:	KT
DRAWN:	KT
CHECKED:	MP
DATE:	07/21/17

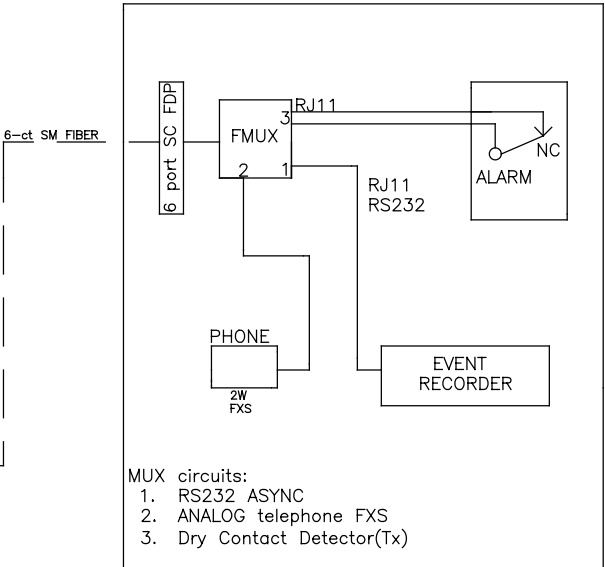
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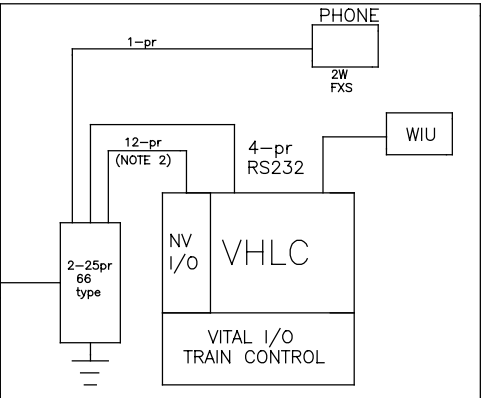
CP 32.0
MICHIGAN CITY OFFICE
(CONTROL CENTER)



COMMUNICATIONS HOUSE (FO)



CROSSING HOUSE



TRAIN CONTROL HOUSE (CIH)

NOTE 1: REPEAT FIBERMUX (FMUX) CONFIGURATION
FOR EVERY CROSSING HOUSE ASSIGNED.

NOTE 2: 12-pr BREAKDOWN (FOR REF. ONLY SEE SITE DWGS.)
1-pr FOTS FAILURE MAJOR
1-pr FOTS FAILURE MINOR
1-pr INTRUSION
1-pr HI-TEMP
2-pr SMOKE DET
1-pr PHASE A
1-pr PHASE B
1-pr XFMUXF
2-pr KEYPAD
1-pr HEAT

NOTES:
1. SIZE OF OC FO NODES AND SC FDPs ARE TO BE DETERMINED.
2. NUMBER OF FIBER TERMINATIONS TO BE DETERMINED.

PLOT DATE: 7/19/2017 9:46:50 PM JKJELLM



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NOT FOR CONSTRUCTION		SERIES CSGDT-36 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
FOTS BLOCK DIAGRAM TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_835	SHEET
SCALE	AS NOTED	179 OF 248

[illegible]

PLOT DATE: 7/19/2017 9:47:05 PM JKJELLM



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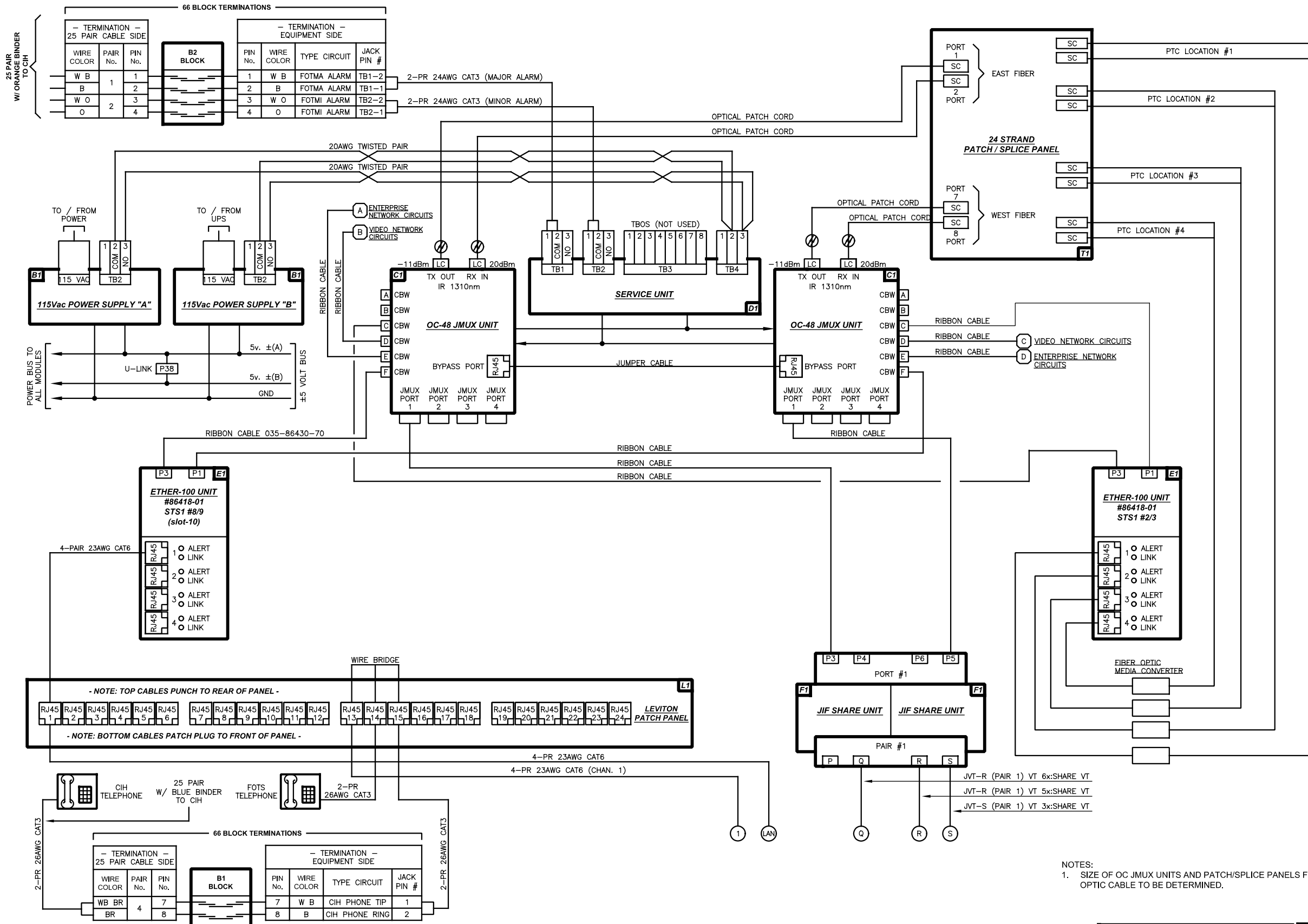
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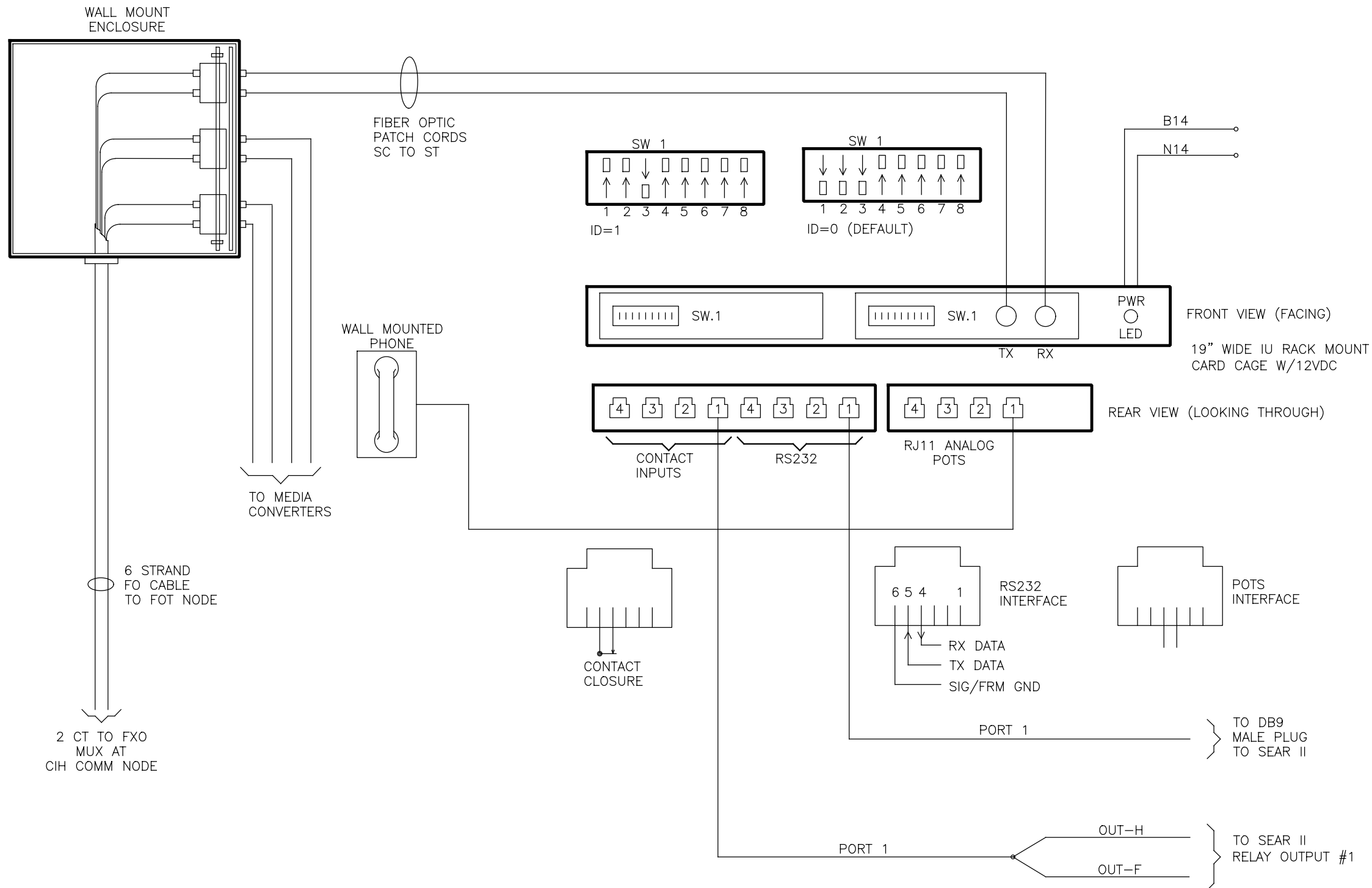


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DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES CSGDT-38 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
INTERLOCKING FIBER OPTIC CONNECTION DETAIL TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_837	SHEET
SCALE	AS NOTED	181 OF 248





SWITCHES SLIDE DOWN TO TURN "ON"

- | | |
|--------|-----------------------|
| #1 ON | DISABLE CHAN 2 |
| #2 ON | DISABLE CHAN 3 |
| #3 ON | DISABLE CHAN 4 |
| #4 OFF | DISABLE ALARM |
| #5 OFF | RING TEST - TEST ONLY |
| #6 OFF | SIGNAL GENERATOR |
| #7 OFF | RING CAD |
| #8 OFF | MASTER |

SWITCHES SLIDE DOWN TO TURN "ON"

- | | |
|--------|--------------------|
| #1 ON | MSB ID |
| #2 ON | 2ND BIT ID |
| #3 ON | LSB ID = 001 |
| #4 OFF | DISABLE ALARM |
| #5 OFF | N/A |
| #6 OFF | N/A |
| #7 OFF | REMOTE LOOP - TEST |
| #8 OFF | LOOP - TEST |

- NOTE:
1. ALL WIRING TO BE #14 UNLESS NOTED.
 2. SLICE FIBERS AT PTC CASE

NOT FOR CONSTRUCTION SERIES CSGDT-39 OF CSGDT-41

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

INTERMEDIATE SIGNAL FIBER OPTIC CONNECTION DETAIL TYPICAL SYSTEM

FILENAME	SHT_WL_CSIG_DET_838	SHEET
SCALE	AS NOTED	182 OF 248

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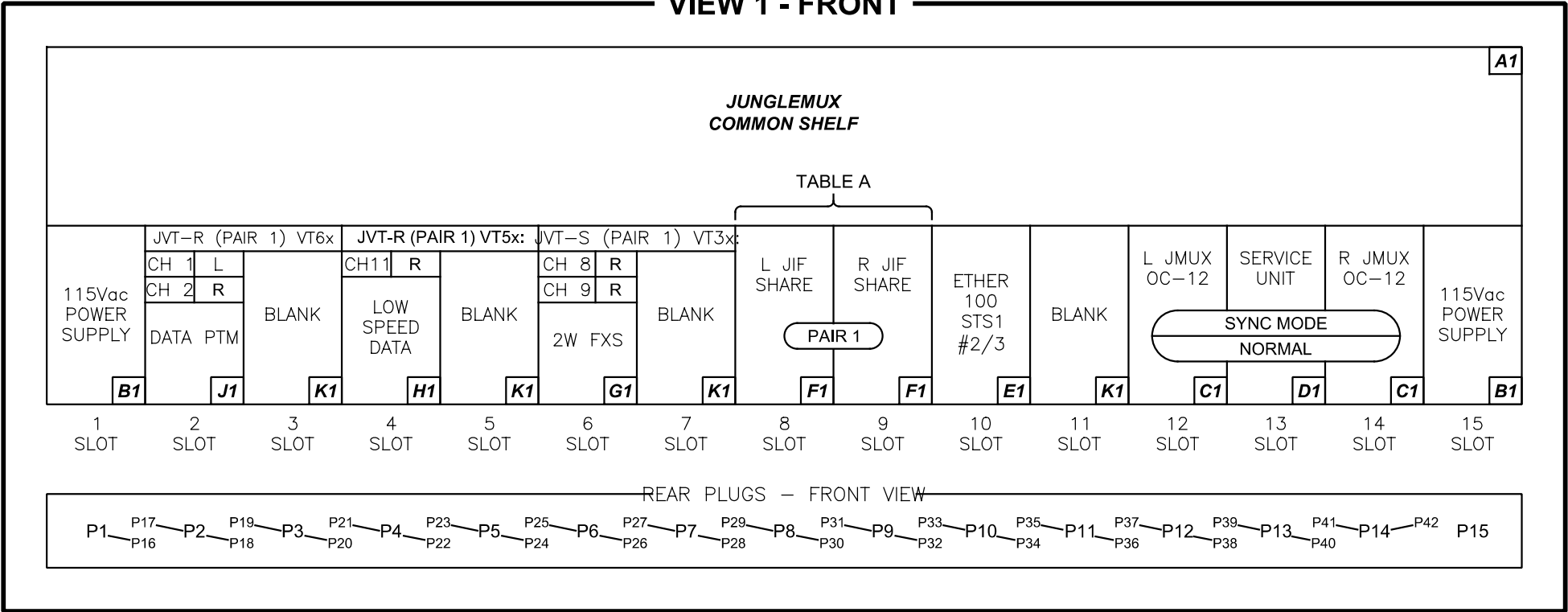
ISSUE	DATE	DESCRIPTION

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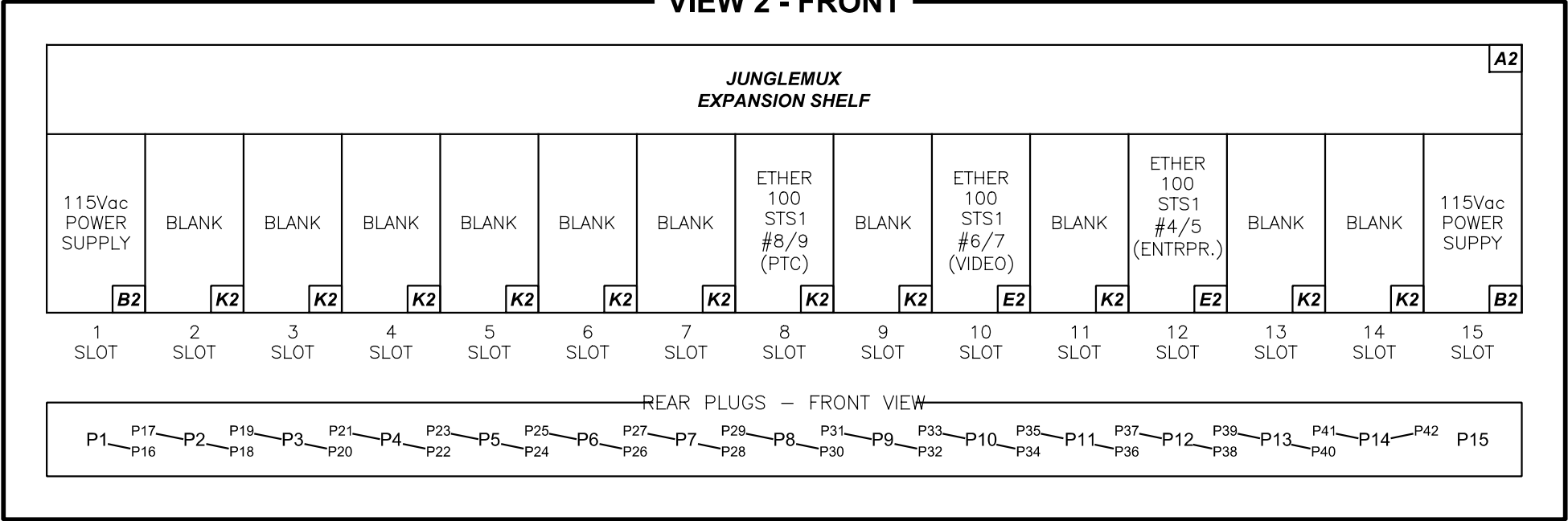
WEST LAKE
CORRIDOR
DYER TO HAMMOND, INDIANA

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DATE:	07/21/17

VIEW 1 - FRONT



VIEW 2 - FRONT



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ISSUE	DATE	DESCRIPTION



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DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES CSGDT-40 OF CSGDT-41
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
JUNGLEMUX EQUIPMENT DETAIL: FIELD LOCATION TYPICAL SYSTEM		
FILENAME	SHT_WL_CSIG_DET_839	SHEET
SCALE	AS NOTED	183 OF 248

PLOT DATE: 7/21/2017 10:10:37 AM JKJELLMMA



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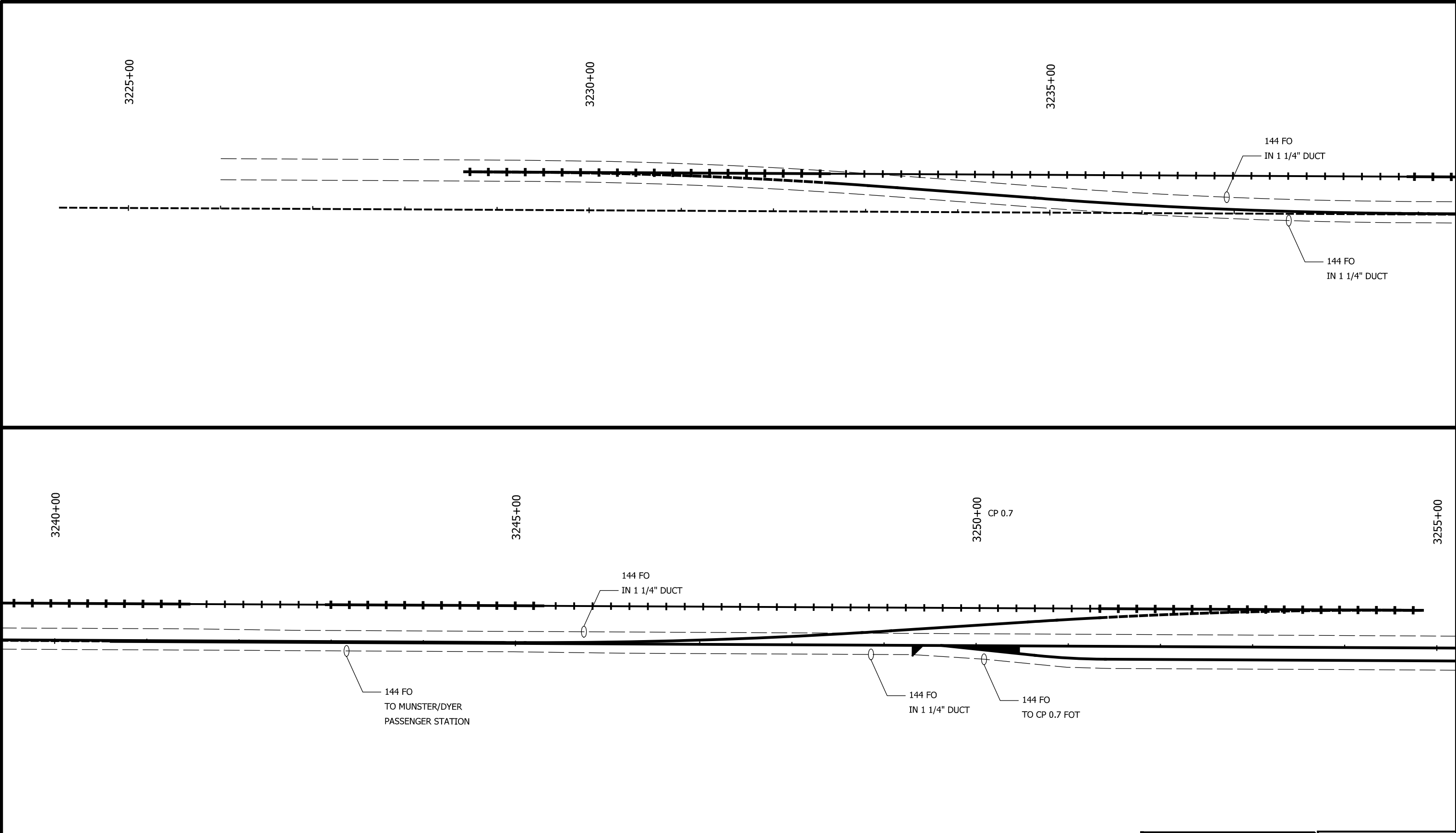
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DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES CSGCB-1 OF CSGCB-15
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
FIBER OPTIC CABLE LAYOUT SYSTEM		
FILENAME	SHT_WL_CSTIG_CB_900	SHEET
SCALE	AS NOTED	185 OF 248



3270+00

– 144 FO
IN 1 1/4" DUCT

— 144 FO
TO CP 0.9 FOT

3280+00
3280+00

3285+00

144 FO
— IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT

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ISSUE	DATE	DESCRIPTION



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DATE:	07/21/17

SERIES
CSGCB-2 OF CSGCB-15

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

FIBER OPTIC CABLE LAYOUT SYSTEM

FILENAME	SHT_WL_CSIG_CB_901	SHEET 186 OF 248
SCALE	AS NOTED	

3300+00

— 144 FO
IN 1 1/4" DUCT

3315+00

- INSTALLATION ON GUIDEWAY TBD

— 144 FO
IN 1 1/4" DUCT

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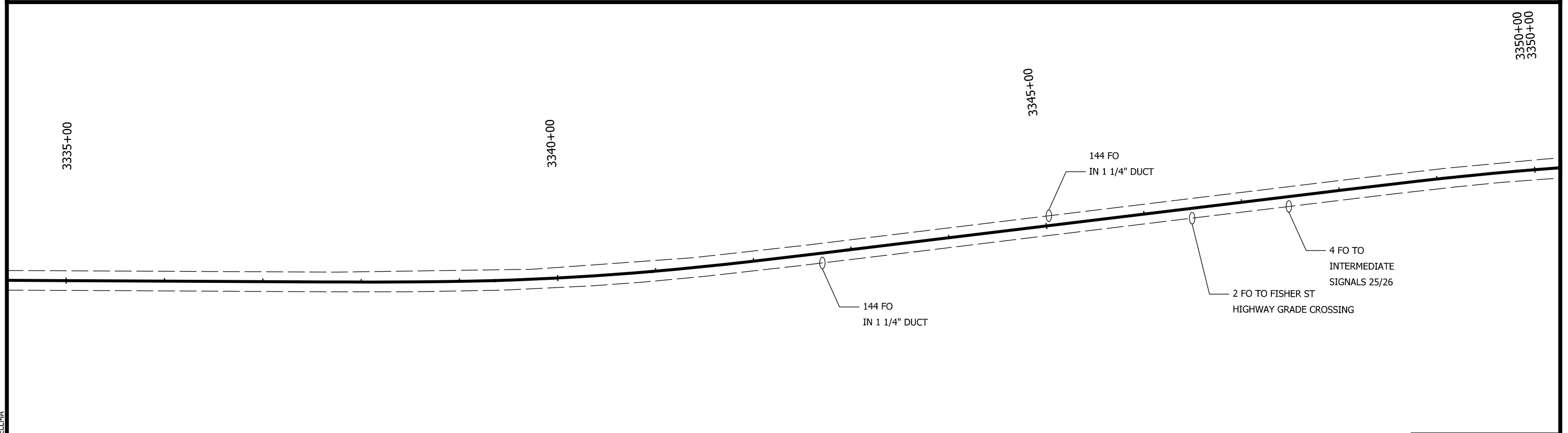
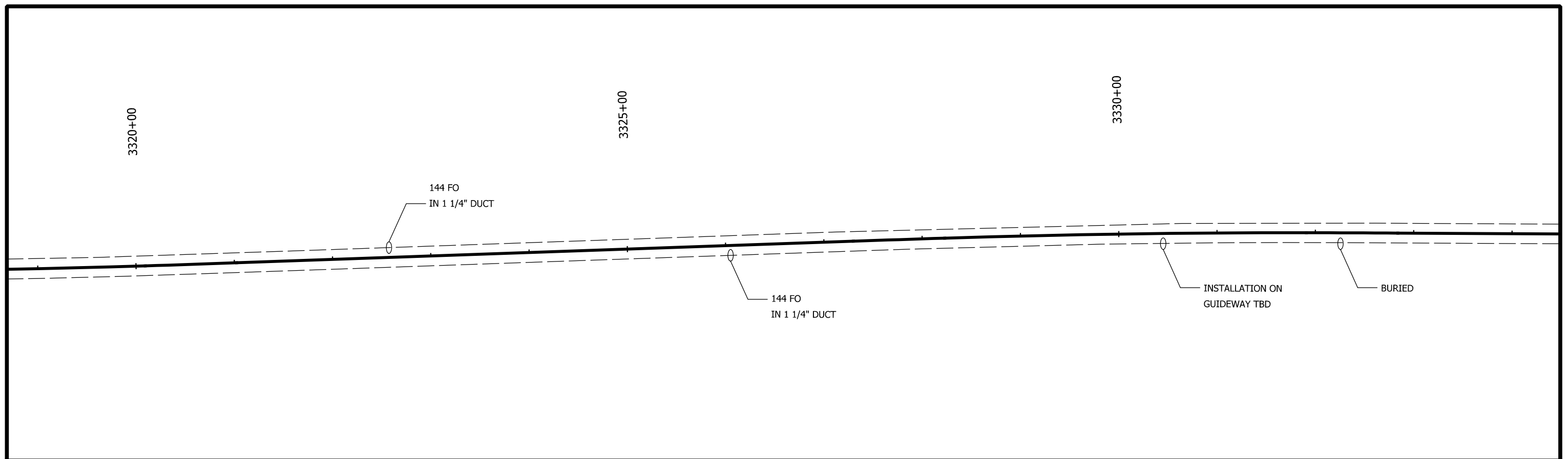
DESIGNED:	ES
DRAWN:	KT
CHECKED:	MJP
DATE:	07/21/17




SERIES
CSGCB-3 OF CSGCB-15

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

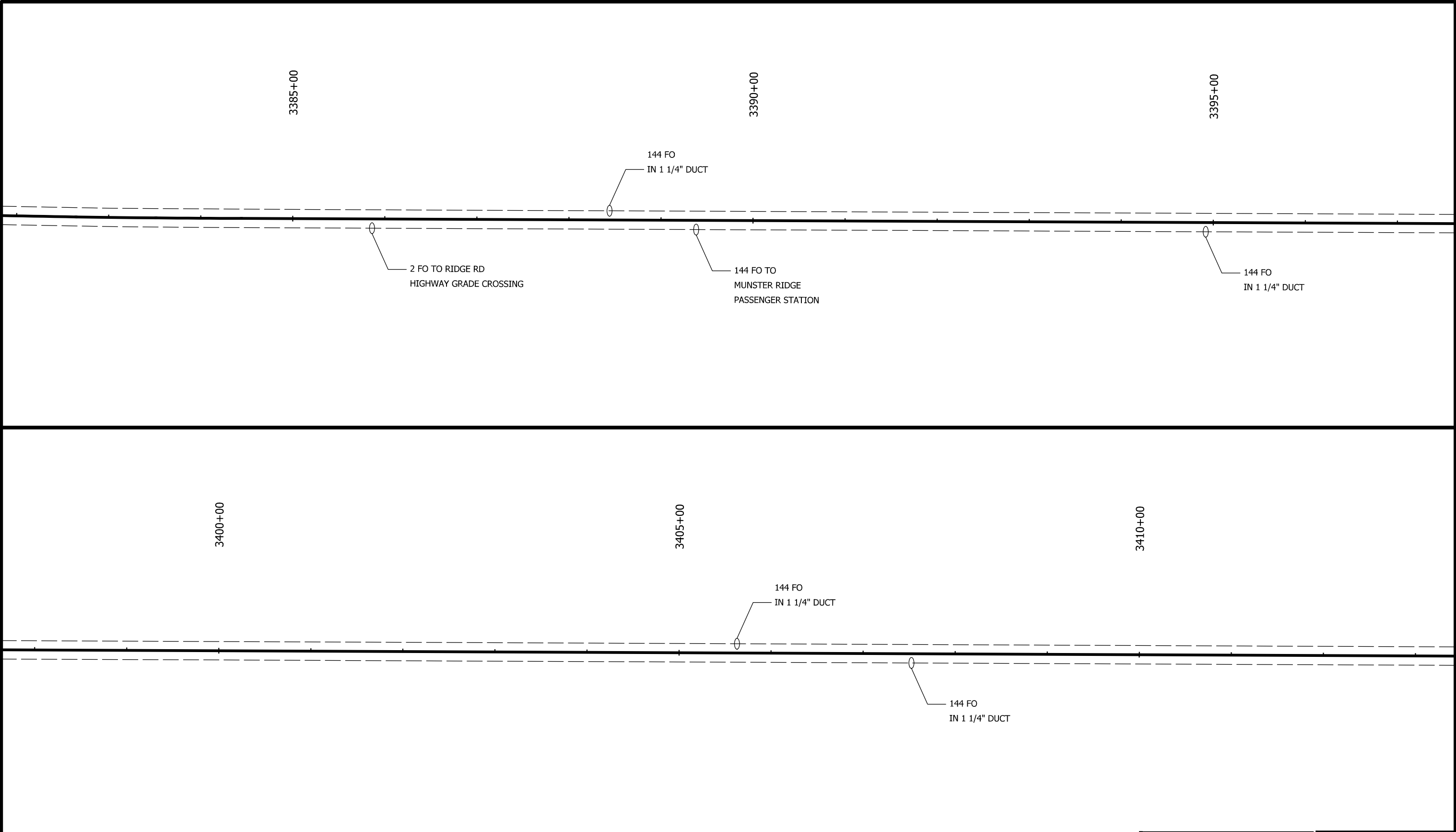
FIBER OPTIC CABLE LAYOUT SYSTEM

FILENAME	SHT_WL_CSIG_CB_902	SHEET 187 OF 248
SCALE	AS NOTED	



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		DRAWN: KT							
		CHECKED: MJP							
		DATE: 07/21/17							
						FIBER OPTIC CABLE LAYOUT SYSTEM			
						FILENAME	SHT_WL_CSIG_CB_903	SHEET	
						SCALE	AS NOTED	188 OF 248	

PLOT DATE: 7/19/2017 9:48:26 PM JKJELMA



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SERIES
CSGCB-6 OF CSGCB-15

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

FIBER OPTIC CABLE LAYOUT
SYSTEM

FILENAME	SHT_WL_CSTG_CB_905	SHEET
SCALE	AS NOTED	190 OF 248

3420+00
3420+00

144 FO
- IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT

3430+00

CP 4.1

3435+00

3440+00

3445+00

144 FO
- IN 1 1/4" DUCT

— 144 FO
TO CP 4.1 FOT

— 144 FO
IN 1 1/4" DUCT

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DYER TO HAMMOND, INDIANA

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DATE:	07/21/17

NOT FOR CONSTRUCTION

SERIES
CSGCB-7 OF CSGCB-15

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

FIBER OPTIC CABLE LAYOUT SYSTEM

FILENAME	SHT_WL_CSIG_CB_906	SHEET
SCALE	AS NOTED	191 OF 248

144 FO
— IN 1 1/4" DUCT

2 FO TO 173RD ST
HIGHWAY GRADE CROSSING

— 144 FO TO
SOUTH HAMMOND
PASSENGER STATION

3475+00

144 FO
— IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT



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WEST LAKE
CORRIDOR

DYER TO HAMMOND, INDIANA

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NOT FOR CONSTRUCTION		SERIES CSGCB-8 OF CSGCB-15
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
FIBER OPTIC CABLE LAYOUT SYSTEM		
FILENAME	SHT_WL_CSG_CB_907	SHEET
SCALE	AS NOTED	192 OF 248

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FILENAME	SHT_WL_CSIG_CB_908	SHEET 193 OF 248
SCALE	AS NOTED	

3480+00

3485+00

3490+00
3490+00

144 FO
— IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT

144 FO
— IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT

— 2 FO TO 165TH ST
HIGHWAY GRADE CROSSING

PLOT DATE: 7/19/2017
9:49:05 PM
JKJELLMA

3510+00

3515+00

3520+00

144 FO
— IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT

— 2 FO TO KENWOOD ST
HIGHWAY GRADE CROSSING

144 FO
IN 1 1/4" DUCT
TO FOT

3525+00

3530+00

3535+00

3540+00

144 FO
— IN 1 1/4" DUCT

— 2 FO TO CONKEY ST
HIGHWAY GRADE CROSSING

— 144 FO
IN 1 1/4" DUCT

— 4 FO TO
INTERMEDIATE
SIGNALS 59/60

— 2 FO TO DETROIT ST
HIGHWAY GRADE CROSSING

— 2 FO TO HIGHLAND ST
HIGHWAY GRADE CROSSING

NOT FOR CONSTRUCTION

SERIES
CSGCB-10 OF CSGCB-15

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

FIBER OPTIC CABLE LAYOUT SYSTEM

FILENAME
SCALE

SHT_WL_CSIG_CB_909

AS NOTED

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194 OF 248

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The logo for the West Lake Corridor is a stylized graphic. It features the words "WEST LAKE" in a large, bold, sans-serif font, with a small evergreen tree icon replacing the letter "I" in "LAKE". Below this, the word "CORRIDOR" is written in a smaller, all-caps, sans-serif font. The entire text is contained within a dark rectangular box with a light-colored border.

DYER TO HAMMOND, INDIANA

DESIGNED:	ES
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CHECKED:	MJP
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3550+00

144 FO
- IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT

3560+00
3560+00

3565+00

3570+00

144 FO
- IN 1 1/4" DUCT

— 144 FO
IN 1 1/4" DUCT

SERIES
CSGCB-11 OF CSGCB-15

FIBER OPTIC CABLE LAYOUT SYSTEM

SHEET
195 OF 248



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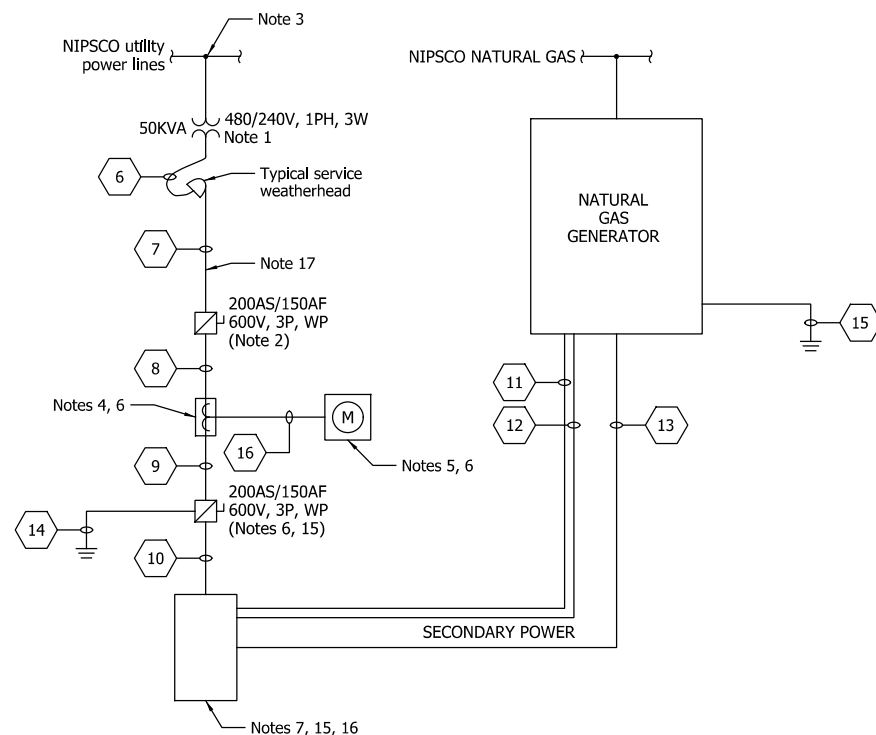
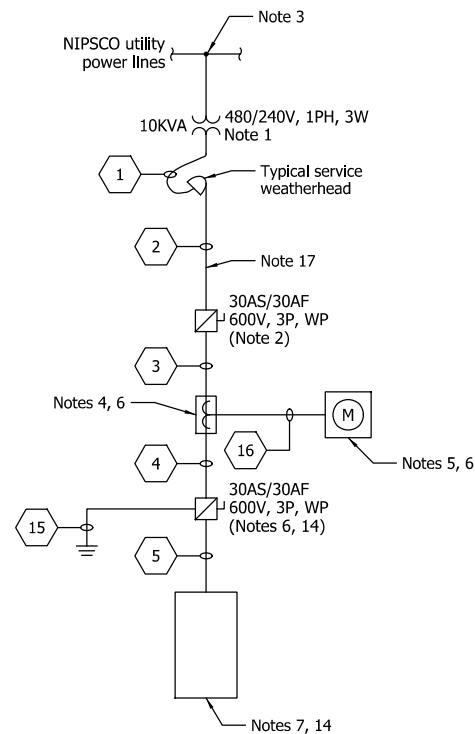
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













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The logo for the West Lake Corridor is a stylized graphic. It features the words "WEST LAKE" in large, bold, white, sans-serif capital letters. A small, dark silhouette of a tree is positioned between the words "WEST" and "LAKE". Below "WEST LAKE", the word "CORRIDOR" is written in smaller, white, sans-serif capital letters. The entire text is set against a dark background within a rectangular frame that has a slightly distressed or hand-painted appearance.

DYER TO HAMMOND, INDIANA

DESIGNED:	ES
DRAWN:	KT
CHECKED:	MJP
DATE:	07/21/17



CABLE AND CONDUIT SCHEDULE			
Legend Number	Cable Description Quantity/Sizes	Conduit Size (Inches)	Notes
	3 #8 AWG	-	10
	3 #8 AWG	1½	11
	3 #8 AWG	1½	12
	3 #8 AWG & 1 #8 AWG GRD	1½	11
	3 #8 AWG & 1 #8 AWG GRD	1½	12
	3 #3/0 AWG	-	10
	3 #3/0 AWG	2½	11
	3 #3/0 AWG	2½	12
	3 #3/0 AWG & 1 #4 AWG GRD	2½	11
	3 #3/0 AWG & 1 #4 AWG GRD	2½	12
	9 #12 AWG	3/4	12, 20
	9 #10 AWG	1	12, 21
	3 #2 AWG & 1 #8 AWG GRD	1½	12, 16
	1 #4 AWG GRD	1	11
	1 #8 AWG GRD	1	11
	8 #10 AWG	1	11

STATIONING	CONTROL POINT LOCATIONS	LINE
3250+75	CONTROL POINT 61.58	WEST LAKE
3267+25	CONTROL POINT 61.78	WEST LAKE
3431+75	CONTROL POINT 64.98	WEST LAKE
3450+25	CONTROL POINT 65.38 173RD HIGHWAY GRADE CROSSING	WEST LAKE
3614+25	CONTROL POINT 68.48	WEST LAKE
	SHEFFIELD AVE HIGHWAY GRADE CROSSING CONTROL POINT 68.8	SOUTH SHORE LINE

STATIONING	NON-CONTROL POINT LOCATIONS	LINE
3311+77	NB FISHER CROSSING START CS 62.73	WEST LAKE
3347+28	FISHER ST HIGHWAY GRADE CROSSING INTERMEDIATE SIGNALS 25/26	WEST LAKE
3350+78	NB RIDGE CROSSING START	WEST LAKE
3381+58	SB FISHER CROSSING START	WEST LAKE
3386+43	RIDGE RD HIGHWAY GRADE CROSSING CS 64.14	WEST LAKE
3419+31	NB 173RD CROSSING START SB RIDGE CROSSING START	WEST LAKE
3470+89	NB 165TH CROSSING START	WEST LAKE
3486+02	NB KENWOOD CROSSING START SB 173RD CROSSING START	WEST LAKE
3491+95	CS 66.14 NB CONKEY CROSSING START	WEST LAKE
3500+85	NB DETROIT CROSSING START NB HIGHLAND CROSSING START	WEST LAKE
3506+55	NB WALTHAM CROSSING START 165TH HIGHWAY GRADE CROSSING	WEST LAKE
3519+41	KENWOOD ST HIGHWAY GRADE CROSSING	WEST LAKE
3526+72	CONKEY ST HIGHWAY GRADE CROSSING	WEST LAKE
3533+56	DETROIT ST HIGHWAY GRADE CROSSING INTERMEDIATE SIGNALS 59/60	WEST LAKE
3547+21	HIGHLAND ST HIGHWAY GRADE CROSSING	WEST LAKE
3543+13	WALTHAM ST HIGHWAY GRADE CROSSING SB 165TH CROSSING START NB DOUGLASS CROSSING START	WEST LAKE
3554+18	SB KENWOOD CROSSING START	WEST LAKE
3570+67	CS 67.63 SB DETROIT CROSSING START SB HIGHLAND CROSSING START	WEST LAKE
3577+00	DOUGLAS ST HIGHWAY GRADE CROSSING SB WALTHAM CROSSING START	WEST LAKE
3611+40	SB DOUGLASS CROSSING START	WEST LAKE

- NOTES:**
1. POLE MOUNTED TRANSFORMER.
 2. POLE MOUNTED FUSED DISCONNECT SWITCH.
 3. COORDINATE WITH NIPSCO FOR LINE VOLTAGE FOR PRIMARY SIDE OF TRANSFORMER CONNECTION.
 4. NIPSCO STANDARD CT COMPARTMENT.
 5. NIPSCO STANDARD METER.
 6. MOUNT CT COMPARTMENT, METER AND FUSED DISCONNECT SWITCH ON WEATHER TREATED WOOD BACKBOARD 76"x48"1" THICK. BOARD SUPPORTED BY 2 - 4"x4" WOOD POSTS IN CONCRETE FOUNDATION.
 7. SIGNAL POWER TRANSFER CASE ENCLOSURE.
 8. CABLES BETWEEN NIPSCO UTILITY POWER LINES AND TRANSFORMER MUST BE MINIMALLY RATED FOR THE VOLTAGE OF THE NIPSCO POWER LINES.
 9. MULTI-LAYER COVERED AERIAL MV CABLE, XLPE, MATCH VOLTAGE OF UTILITY LINE BEING CONNECTED TO.
 10. CABLE TO BE XHHW-2.
 11. CONDUIT TO BE GRC.
 12. CONDUIT TO BE PVC SCHEDULE 40.
 13. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 UNO.
 14. PROPERLY GROUND ENCLOSURE WITH 1 #8 AWG TO GROUNDING ELECTRODE ROD, 3/4" DIA. X 10' STAINLESS STEEL.
 15. PROPERLY GROUND ENCLOSURE WITH 1 #4 AWG TO GROUNDING ELECTRODE ROD, 3/4" DIA. X 10' STAINLESS STEEL.
 16. CONNECT CABLE TO ATS IN SIGNAL POWER TRANSFER CASE ENCLOSURE.
 17. WEATHERHEAD AND CONDUIT MOUNTED ON POLE.
 18. PROVIDE 35KW 120V/240V 1 PHASE GAS GENERATOR WITH 100A 2 POLE CIRCUIT BREAKER.
 19. 100A, 1 PHASE 120V/240V AUTOMATIC TRANSFORMER SWITCH WITH SWITCHES NEUTRAL AND AUTO EXERCISER CIRCUIT.
 20. CONTROL CIRCUITS FOR GENERATION.
 21. 120V POWER CIRCUIT FOR BATTERY, HEATER, ETC.

PLOT DATE: 7/19/2017 9:49:58 PM JKJELMA

GENERAL NOTES

1. GENERAL CONSTRUCTION NOTES APPLY TO ALL WORK PERFORMED UNDER THIS CONTRACT.
2. PERFORM WORK IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES AND REGULATIONS PERTAINING TO OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970.
3. EXAMINE THE SITE AND VERIFY CONTROLLING PHYSICAL CONDITIONS, CONSTRUCTION DATA AND UTILITIES.
4. BRING TO THE ATTENTION OF THE ENGINEER ANY DISCREPANCIES WITHIN THE DRAWINGS, CODES OR STANDARDS FOR CORRECTIVE ACTION PRIOR TO PROCEEDING WITH CONSTRUCTION.
5. THE ARRANGEMENTS OF THE CONDUITS AND CABLE ROUTING SHOWN ON THE PLANS MAY HAVE TO BE MODIFIED TO SUIT SITE-SPECIFIC REQUIREMENTS. CONFLICTS WITH EXISTING UTILITIES AND STRUCTURES SHALL BE RESOLVED IN THE FIELD AT THE DIRECTIONS OF THE ENGINEER OR PROJECT MANAGER.
6. ALL CONSTRUCTION WORK SHALL BE PERFORMED BY QUALIFIED, EXPERIENCED PERSONNEL.
7. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM THE DRAWING.
8. VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION. IF FIELD CONDITIONS PROHIBIT USE OF THE CONTRACT DRAWING DESIGN DETAILS, SUBMIT ALTERNATE DESIGN DETAILS FOR APPROVAL BY THE ENGINEER.
9. CONTRACTOR SHALL PROTECT ALL EXISTING FACILITIES WHETHER EXPLICITLY SHOWN OR NOT.
10. CONTRACTOR SHALL REPAIR ALL MATERIAL AND SYSTEMS DAMAGED DURING THE PERFORMANCE OF WORK UNDER THIS CONTRACT ALL REPAIRS SHALL BE AT THE SOLE COST OF THE CONTRACTOR.
11. CONTRACTOR TO IDENTIFY ALL UNDERGROUND UTILITIES VIA HAND DIGGING AND/OR OTHER APPROVED MEANS PRIOR TO MECHANICAL EXCAVATION.
12. EXISTING UTILITIES HAVE BEEN SHOWN ACCORDING TO EXISTING DOCUMENTS AND EXACT LOCATION MAY NOT BE KNOWN. THERE MAY BE ADDITIONAL EXISTING UTILITIES WHERE NO EXISTING DOCUMENTATION EXISTS AND THEREFORE NOT SHOWN ON THESE PLANS.
13. ALL COMPONENTS/HARDWARE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURE.
14. FIELD CONNECTIONS SHALL BE BOLTED IN TIGHTENED POSITION UNLESS OTHERWISE NOTED. AS A MINIMUM ONE THREAD PER NUT SHOULD SHOW. SIZE OF THE BOLT HOLES TO BE 1/16" LARGER THAN BOLT DIAMETER, UNLESS OTHERWISE NOTED.
15. MANDATORY EQUIPMENT (JUNCTION BOXES, FITTINGS, ETC.) ARE SHOWN. CONTRACTOR SHALL PROVIDED ALL COMPONENTS REQUIRED BY NEC AND OTHER CODES.
16. THE CONTRACTOR SHALL COORDINATE WITH NICTD FOR DESIGNATED SITE ACCESS, EMPLOYEE PARKING AND TEMPORARY FACILITIES.
17. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE OF ACCUMULATION OF WASTE MATERIAL OR RUBBISH CAUSED BY CONSTRUCTION ACTIVITIES. WASTE REMOVAL METHODS SHALL BE APPROVED BY THE OWNER.

PERFORMANCE NOTES

1. THE CONTRACTOR SHALL INSTALL COMPLETE SUBSTATION GROUNDING SYSTEM, INCLUDING GROUND GRID AND EARTH ELECTRODES IN COMPLIANCE WITH IEEE 80.
2. THE CONTRACTOR SHALL INSTALL CONDUCTOR SYSTEM PROTECTING SUBSTATION METALLIC STRUCTURES, TRANSFORMERS, AND ALL OUTDOOR EQUIPMENT IN COMPLIANCE WITH NFPA 780. CONDUCTOR SYSTEM SHALL CONSIST OF AIR TERMINALS ON ROOFS, BONDING OF STRUCTURE AND OTHER METAL OBJECTS, GROUNDING ELECTRODES, AND INTERCONNECTING CONDUCTORS.
3. THE CONTRACTOR SHALL PROVIDE INTERIOR AND EXTERIOR LIGHTING, INCLUDING FURNISHING AND INSTALL LIGHTING FIXTURES AND PROVIDE ADEQUATE FOOT-CANDLE REQUIREMENTS IN COMPLIANCE WITH IESNA.
4. THE CONTRACTOR SHALL PROVIDE STRAY CURRENT DRAINAGE MANHOLE OUTSIDE OF THE SUBSTATION FOR THE UTILITIES TO CONNECT TO THE SUBSTATION GROUND GRID SYSTEM TO MITIGATE STRAY CURRENT.
5. THE CONTRACTOR SHALL PROVIDE PRE-ENGINEERED OUTDOOR ENCLOSURES FOR THE TRACTION POWER SUBSTATIONS IN ACCORDANCE TO THE JURISDICTIONAL AUTHORITY'S BUILDING CODE. THE PREFABRICATED SUBSTATION ENCLOSURE SHALL HOUSE ALL SUBSTATION EQUIPMENT IN A RESISTANT STEEL HOUSING. THE ENCLOSURES SHALL BE SHOP ASSEMBLED COMPLETE WITH THE SPECIFIED SUBSTATION EQUIPMENT AND ACCESSORIES, TESTED AND READY FOR SHIPMENT TO SITE FOR INSTALLATION.
6. THE CONTRACTOR SHALL MAINTAIN VEHICULAR AND PEDESTRIAN TRAFFIC WITHIN PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE REQUIREMENTS OF THE JURISDICTIONAL AUTHORITY.
7. THE CONTRACTOR SHALL PROVIDE SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) EQUIPMENT FOR CONTROLLING THE OPERATION AND/OR STATUS MONITORING OF ELECTRIFIED TRACTION CIRCUIT BREAKERS, DISCONNECTS, PROTECTION RELAYS, BUS VOLTAGES AND CURRENT, BATTERY SYSTEM AND GENERAL ALARMS AT THE TRACTION POWER SUBSTATIONS. THE RTU EQUIPMENT SHALL BE 100% COMPATIBILITY WITH THE EXISTING SCADA EQUIPMENT FOR NICTD.
8. EXACT SUBSTATION SIZE, LAYOUT, AND SHIPPING SPLITS SHALL BE FINALIZED BY THE CONTRACTOR. CONTRACTOR SHALL ENSURE THAT THE SUBSTATION MAINTAINS ALL PROPER CLEARENCES, CAN BE SAFELY TRANSPORTED TO THE SITE AND CAN BE LIFTED INTO PLACE.

GROUND GRID NOTES

1. ALL SURFACES TO BE GROUNDED SHALL BE THOROUGHLY CLEANED BEFORE MAKING CONNECTIONS.
2. THE SUBSTATION GROUND SYSTEM SHALL BE COMPRISED OF A GROUND GRID UNDER THE SUBSTATION BUILDING AND GROUND RINGS AROUND THE NIPSCO EQUIPMENT.
3. GROUND GRID CABLES SHALL BE #4/0 AWG BARE STRANDED COPPER WIRE. ALL GROUND RODS SHALL BE COPPER-CLAD STEEL, 3/4" DIAMETER MINIMUM, 10'-0" IN LENGTH, TOPS DRIVEN TO 2'-6" BELOW FINISHED GRADE.
4. GROUND GRID SHALL BE BURIED A MINIMUM OF 2'-6" BELOW FINISHED GRADE.
5. ALL GROUNDING AND BONDING SHALL COMPLY WITH UL STANDARD #467, NFPA 70, AND IEEE 80.
6. A TWO-FOOT RISER FROM GROUND GRID SHALL BE PROVIDED ABOVE GRADE A MINIMUM ONE AT EACH OF TWO DIAMETRICALLY OPPOSITE CORNERS OF THE SUBSTATION HOUSING.
7. ALL MANHOLES, HANDHOLES AND PULLBOXES THAT ARE WITHIN THE GROUND GRID SHALL BE PROVIDED WITH #1/0 COPPER CABLE CONNECTION TO THE GROUND GRID.
8. ALL CORNER POSTS, GATE POSTS AND FENCE POSTS AT INTERVALS NOT EXCEEDING 20 FEET SHALL BE CONNECTED TO THE GROUND GIRD BY #2/0 AWG BARE COPPER CONDUCTORS.
9. FOUNDATION STEEL REINFORCEMENT SHALL BE CONNECTED TO THE GROUND GRID BY #4/0 AWG BARE COPPER CONDUCTOR AT THE FOUR CORNERS.
10. THE CONTRACTOR SHALL PROVIDE ADDITIONAL #4/0 AWG BARE COPPER CONDUCTOR PIGTAILS FOR BONDING THE FOUNDATION STEEL REINFORCEMENTS TO THE GROUND GRID AT THE FOUR CORNERS (NOT SHOWN).
11. PROVIDE #4/0 AWG FLEXIBLE COPPER CONDUCTOR PIGTAILS FOR CONNECTIONS TO THE SUBSTATION ENCLOSURE BASE FRAME GROUND PADS AND LIGHTNING PROTECTION SYSTEM.
12. PROVIDE SINGLE ISOLATED GROUND ROD WITH 2 KV INSULATED #4/0 COPPER CABLES IN 1" PVC CONDUIT CONNECTED TO EACH SURGE ARRESTER LOCATED DIRECTLY BENEATH EACH DC FEEDER COMPARTMENT.
13. ALL GROUND CONNECTIONS BELOW GRADE SHALL BE EXOTHERMIC TYPE AND MADE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
14. ALL GROUND CONNECTIONS ABOVE GRADE SHALL BE BOLTED TYPE, UNLESS OTHERWISE NOTED. COIL SUFFICIENT ENGTH OF CABLE ABOVE FINISH GRADE AT EACH GROUND RISER LOCATION FOR CONNECTION TO EQUIPMENT NOT ALREADY IN PLACE AND TEMPORARILY TAPE CABLE END TO PREVENT FRAYING.
15. GROUND CABLE PASSING THROUGH CONCRETE INTO EXPOSED AREAS SHALL BE PROTECTED AGAINST ABRASION AT POURED-IN-PLACE CONCRETE SLABS.
16. FOR SUBSTATION GROUNDING DETAILS, SEE DRAWING TPD2-3

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
AL	ALUMINUM
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BC	BATTERY CHARGER
BKR	BREAKER
C	CONDUIT, CLOSE
CB	CIRCUIT BREAKER
CC	CLOSE COIL
CKT	CIRCUIT
CLR	CLEARANCE
COMM	COMMUNICATION
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER, CABLE TRAY
DIA	DIAMETER
DC	DIRECT CURRENT
DSC	DISCONNECT
DP	DISTRIBUTION PANEL
DWVG	DRAWING
(E)	EXISTING
EGBB	EQUIPMENT GROUND BUS BAR
EL	EMERGENCY LIGHTING, ELEVATION
ELEC	ELECTRICAL
ELEV.	ELEVATION
EQUIP	EQUIPMENT
ETB	EARTH TERMINAL BLOCK
F	FUSES, FEEDER
FAT	FACTORY ACCEPTANCE TEST
FLA	FULL LOAD AMPS
FO	FIBER OPTIC
FOMC	FIBER OPTIC MEDIA CONVERTER
FT	FUSE TERMINAL
GALV	GALVANIZED
G/GND	GROUND
GRS	GALVANIZED RIGID STEEL
HTR	HEATER
HZ	HERTZ
IFC	ISSUED FOR CONSTRUCTION
INS	INSULATED
INV	INVERTER
I/F	INTERFACE
I/O	INPUT/OUTPUT
IPT	INTERPHASE POWER TRANSFORMER
ISOL	ISOLATION SWITCH
JB	JUNCTION BOX
JBC	JUNCTION BOX CABINET
KI	KEY INTERLOCK
KCML	KILO CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
LA	LIGHTNING ARRESTOR
LFMC	FLEXIBLE LIQUID-TIGHT METALLIC CONDUIT
LFNC	FLEXIBLE LIQUID-TIGHT NONMETALLIC CONDUIT
LMR	LOAD MEASURING RESISTOR
LS	LIMIT SWITCH, LIGHT SWITCH
LTG	LIGHTING
LV	LOW VOLTAGE
M	MOTOR, METER
MAX	MAXIMUM
MCCB	METAL CLAD CIRCUIT BREAKER
M&SF	MAINTENANCE AND STORAGE FACILITY

ABBREVIATIONS

mA	MILLIAMPS
MAINT	MAINTENANCE
MH	MANHOLE
MIN	MINIMUM
NC	NORMALLY CLOSED, NEGATIVE CONTACTOR
NEG	NEGATIVE
NGBB	NEGATIVE GROUND BUS BAR
NIPSCO	NORTHERN INDIANA PUBLIC SERVICE COMPANY
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OC	OPEN COIL
O&M	OPERATION AND MAINTENANCE
OS	OPERATING SYSTEM
OT	OUTLET TERMINAL
PB	PULL BOX, PUSH BUTTON
PCS	POWER CUTOFF SWITCH
PDS	POWER DISTRIBUTION SYSTEM
PF	POWER FACTOR
PNL	PANEL
PNLBD	PANELBOARD
POS	POSITIVE
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
QTY	QUANTITY
RECEPT	RECEPTACLE
RECT	RECTIFIER
RGS	RIGID GALVANIZED STEEL
RMS	ROOT MEAN SQUARE
RT	RECTIFIER TRANSFORMER
RTU	REMOTE TERMINAL UNIT
SA	SURGE ARRESTOR
SAT	SITE ACCEPTANCE TEST
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SD	SHUT DOWN
SEC	SECOND
SP	SPARE
STA	STATION
STG	STINGER
STP	SHIELDED TWISTED PAIR
SUPV	SUPERVISORY
SW	SWITCH
SWGR	SWITCHGEAR
T	TRIP
TB	TERMINAL BOX
TD	TIME DELAY
TDC	TIME DELAY CLOSE
TDDO	TIME DELAY DROPOUT
TDPU	TIME DELAY PICKUP
TDR	TIME DELAY RELAY
TR	TRANSFORMER
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UT	PUNSHIELDED TWISTED PAIR
V	VOLT
VA	VOLT AMPERE
VAC	VOLT AC
VDC	VOLT DC
W	WATT
WP	WEATHERPROOF
XFMR	TRANSFORMER
XREC	TRANSFORMER RECTIFIER

NOT FOR CONSTRUCTION

SERIES TPGN-1 OF TPGN-2

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

NOTES AND ABBREVIATIONS
SYSTEM

FILENAME	SHT_WL_TP_GN_001	SHEET
SCALE	AS NOTED	200 OF 248



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DIAGRAM SYMBOLS

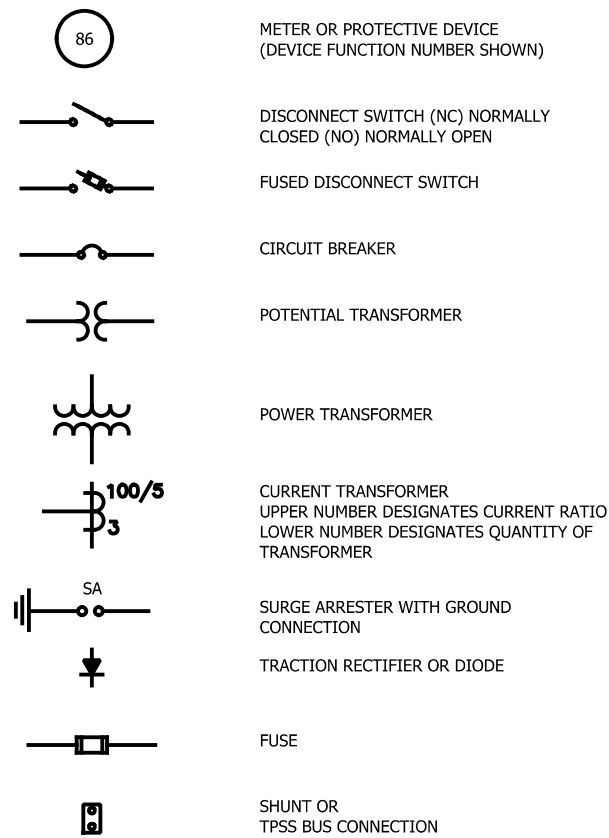
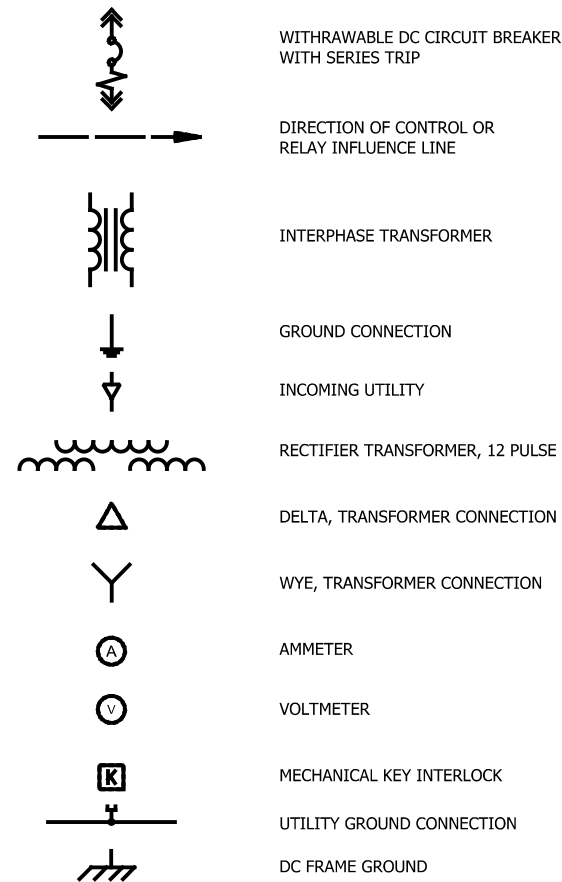
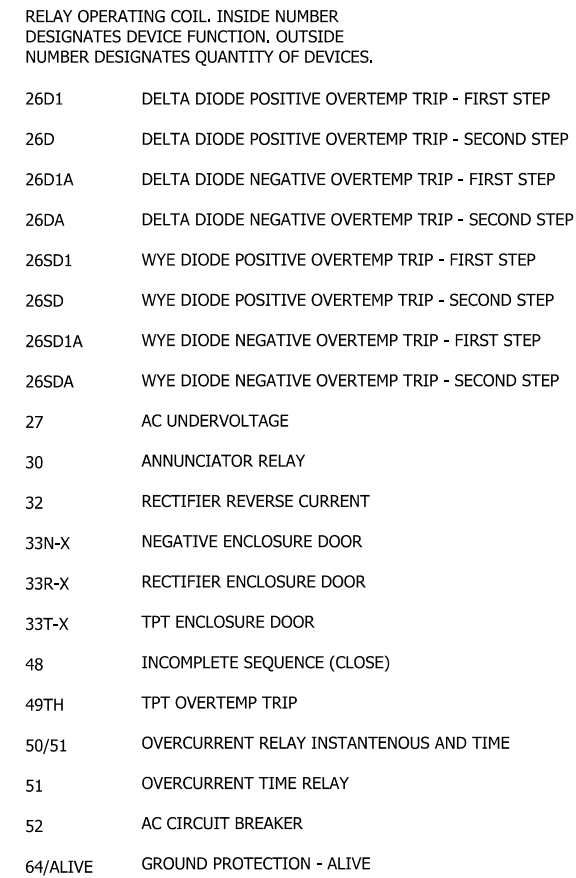


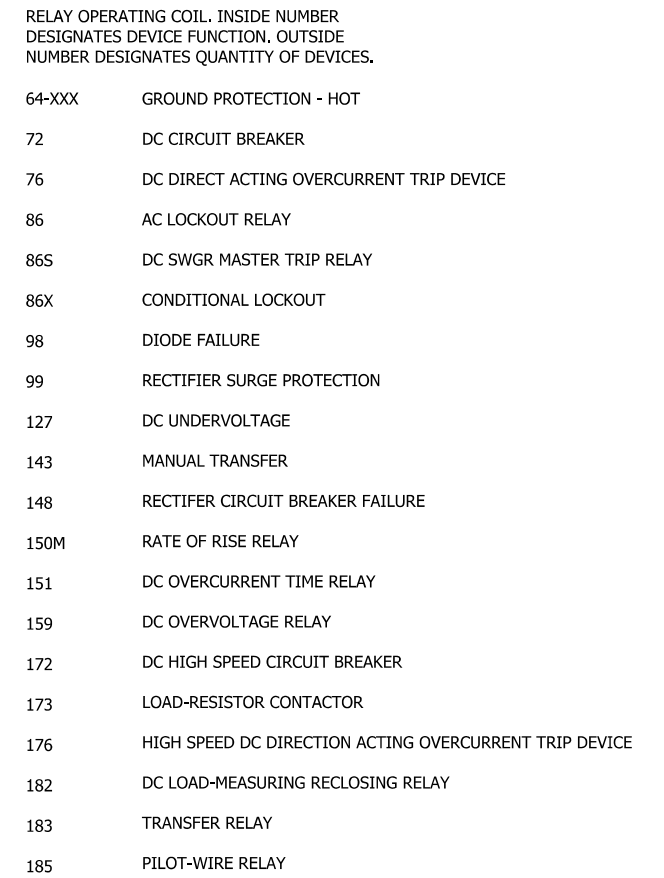
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DEVICE FUNCTION NO.



DEVICE FUNCTION NO.



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SERIES
TPKP-1 OF TPKP-1

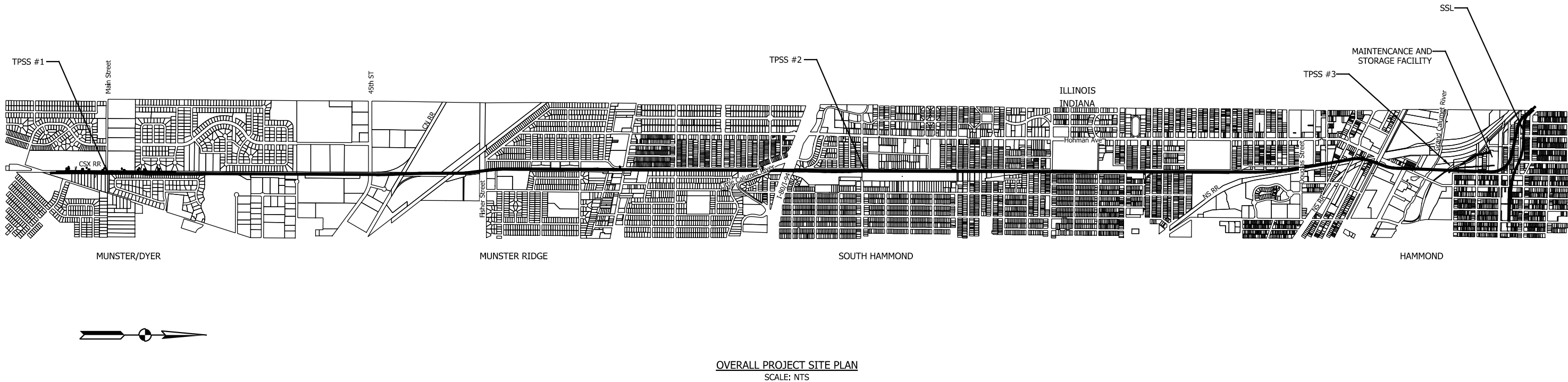
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OVERALL PROJECT SITE PLAN
SYSTEM

FILENAME
SHT_WL_TP_KP_001

SCALE
AS NOTED

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202 OF 248



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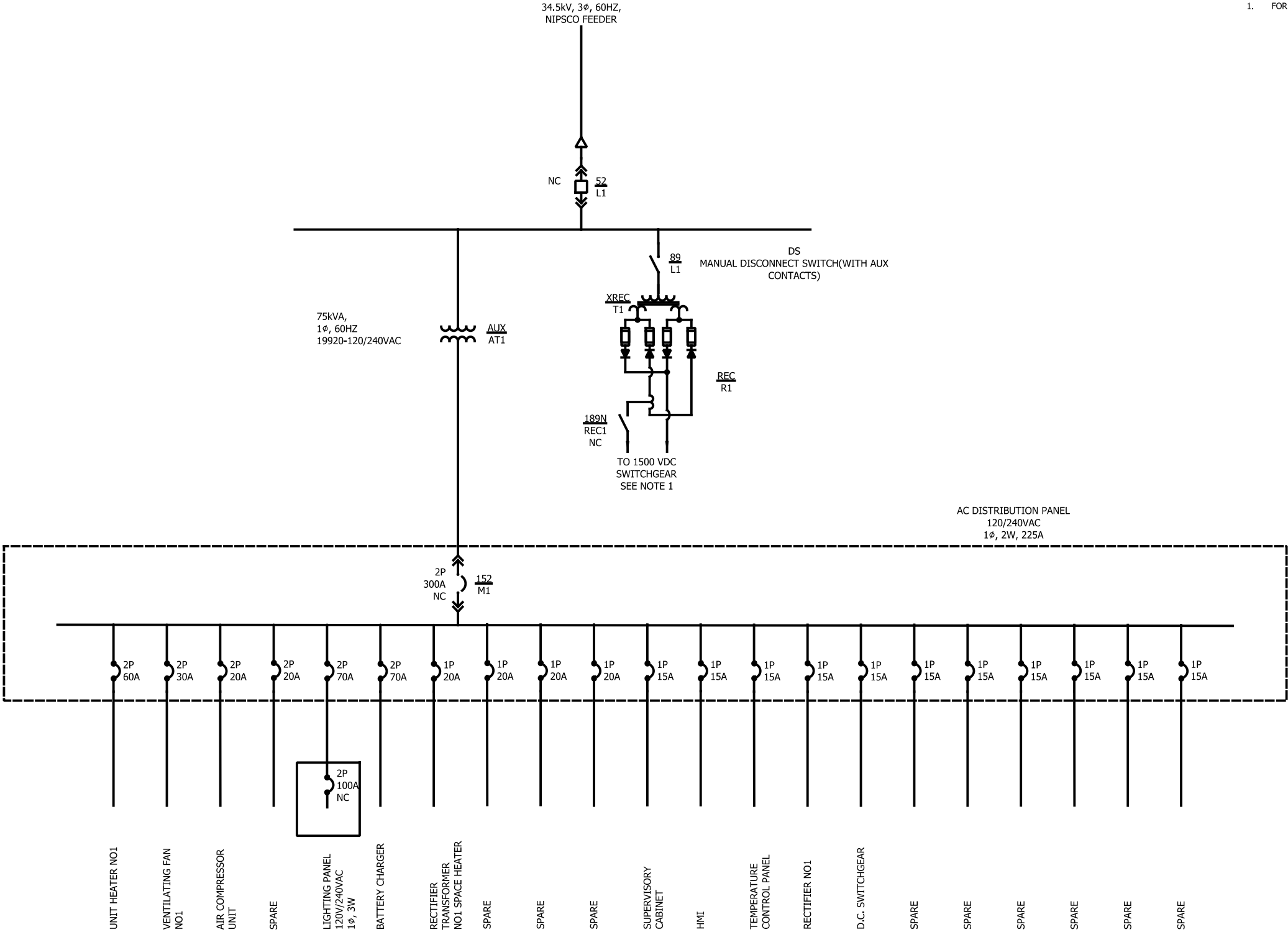
SERIES
TPSL1-2 OF TPSL1-3

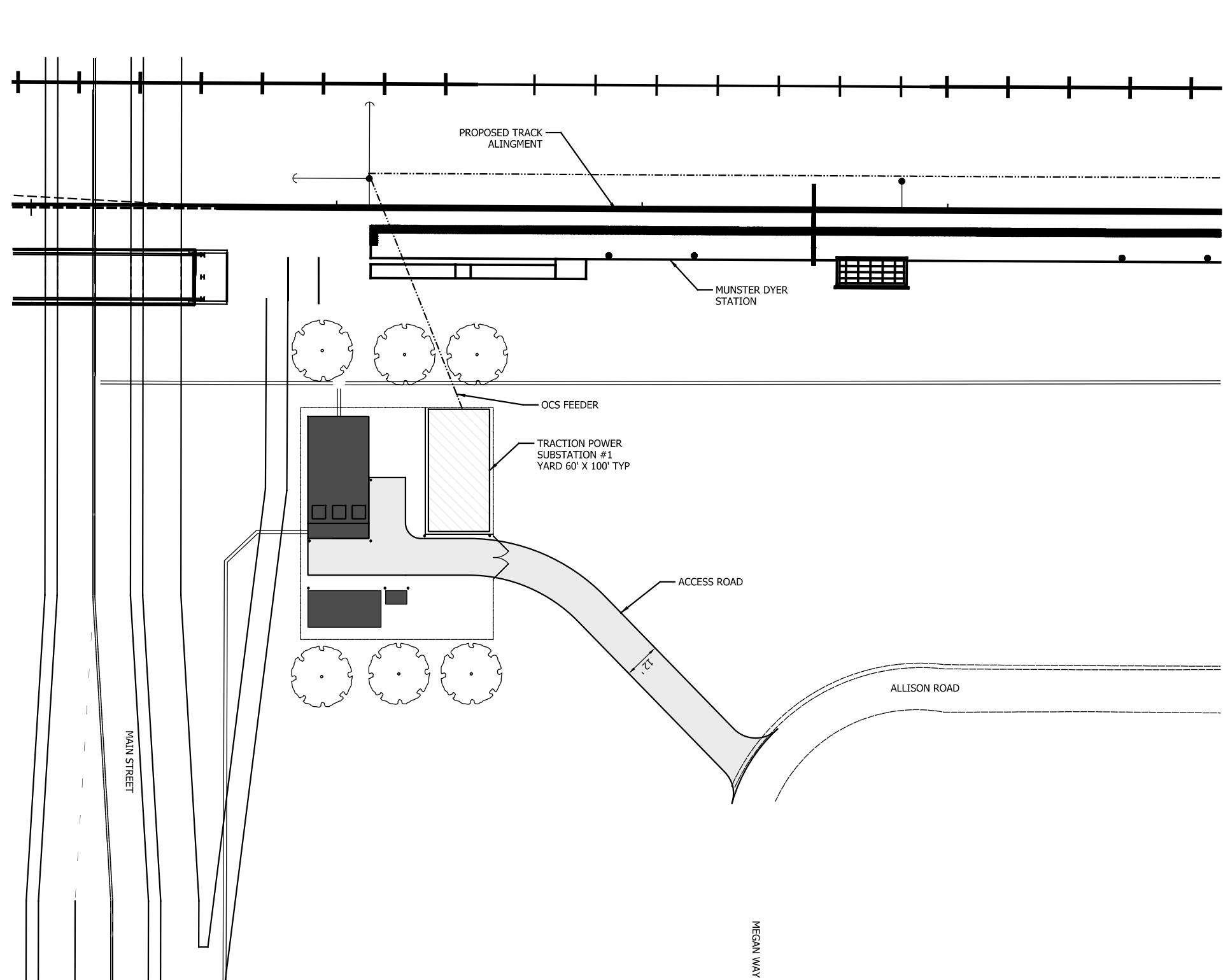
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #1 AUX SINGLE LINE DIAGRAM
SYSTEM

FILENAME	SHT_WL_TP_SL_102	SHEET
SCALE	AS NOTED	204 OF 248

- NOTES
- FOR TRACTION POWER SINGLE LINE DIAGRAM, SEE DRAWING TP_SL1-1.





SUBSTATION #1 AREA PLAN

SCALE: 1" = 40'

PLOT DATE: 7/19/2017 9:51:52 PM JKJELLMA

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DESIGNED:	ED
DRAWN:	MJA
CHECKED:	JS
DATE:	07/21/17

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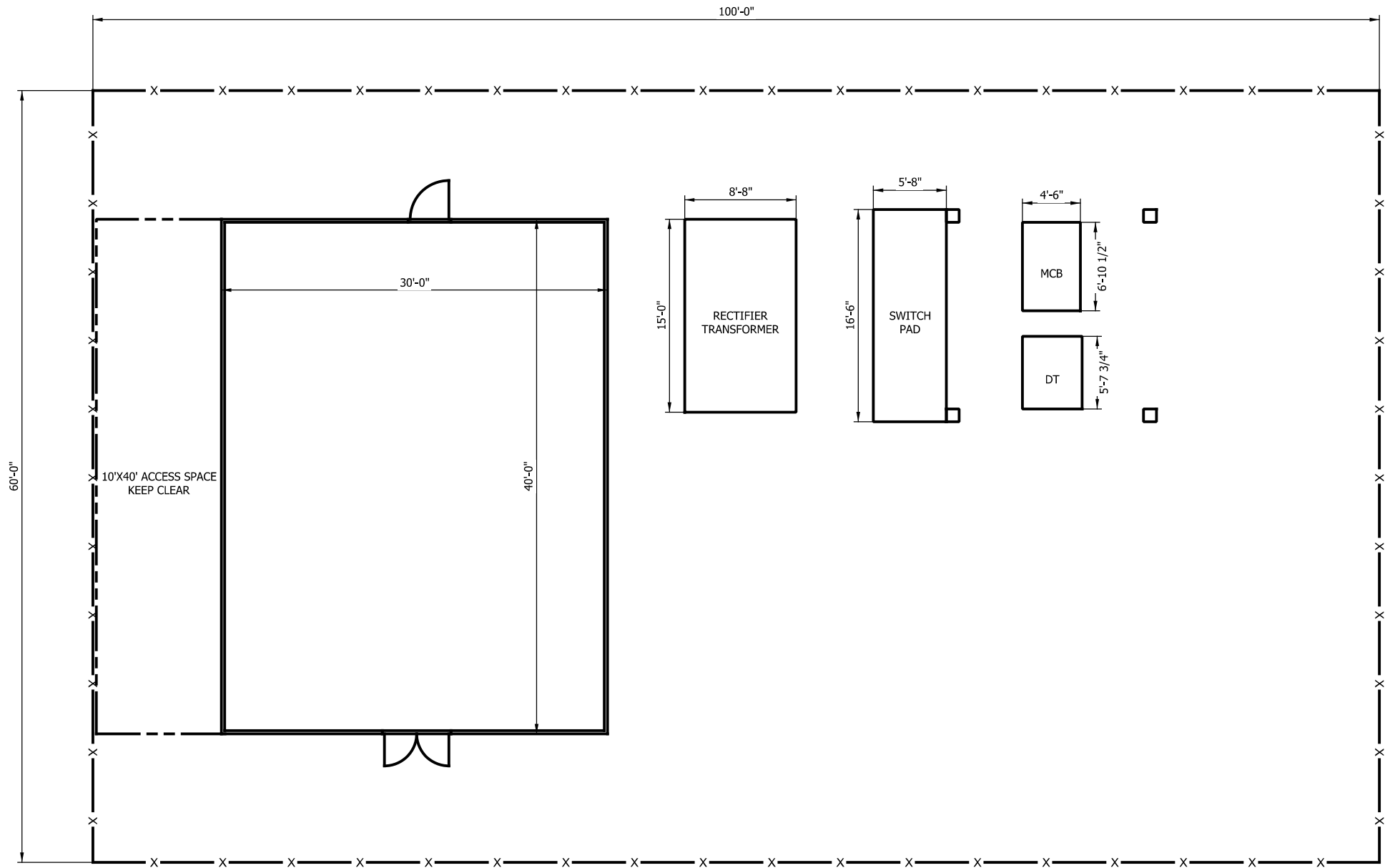
SERIES
 TPPL1-1 OF TPPL1-3

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 SINGLE TRACK

**TPSS #1 AREA PLAN
SYSTEM**

FILENAME	SHT_WL_TP_PL_110	SHEET
SCALE	AS NOTED	206 OF 248

- NOTES
1. INTERIOR EQUIPMENT NOT SHOWN ON THIS DRAWING.
 2. FOR SUBSTATION EQUIPMENT LAYOUT, SEE DRAWING TP_PL_1-2.



TPPS #1 YARD EQUIPMENT PLAN
Scale: 3/16" = 1'

SCALE: 3/16" = 1'
0' 2'-1/2" 4'-1/2"

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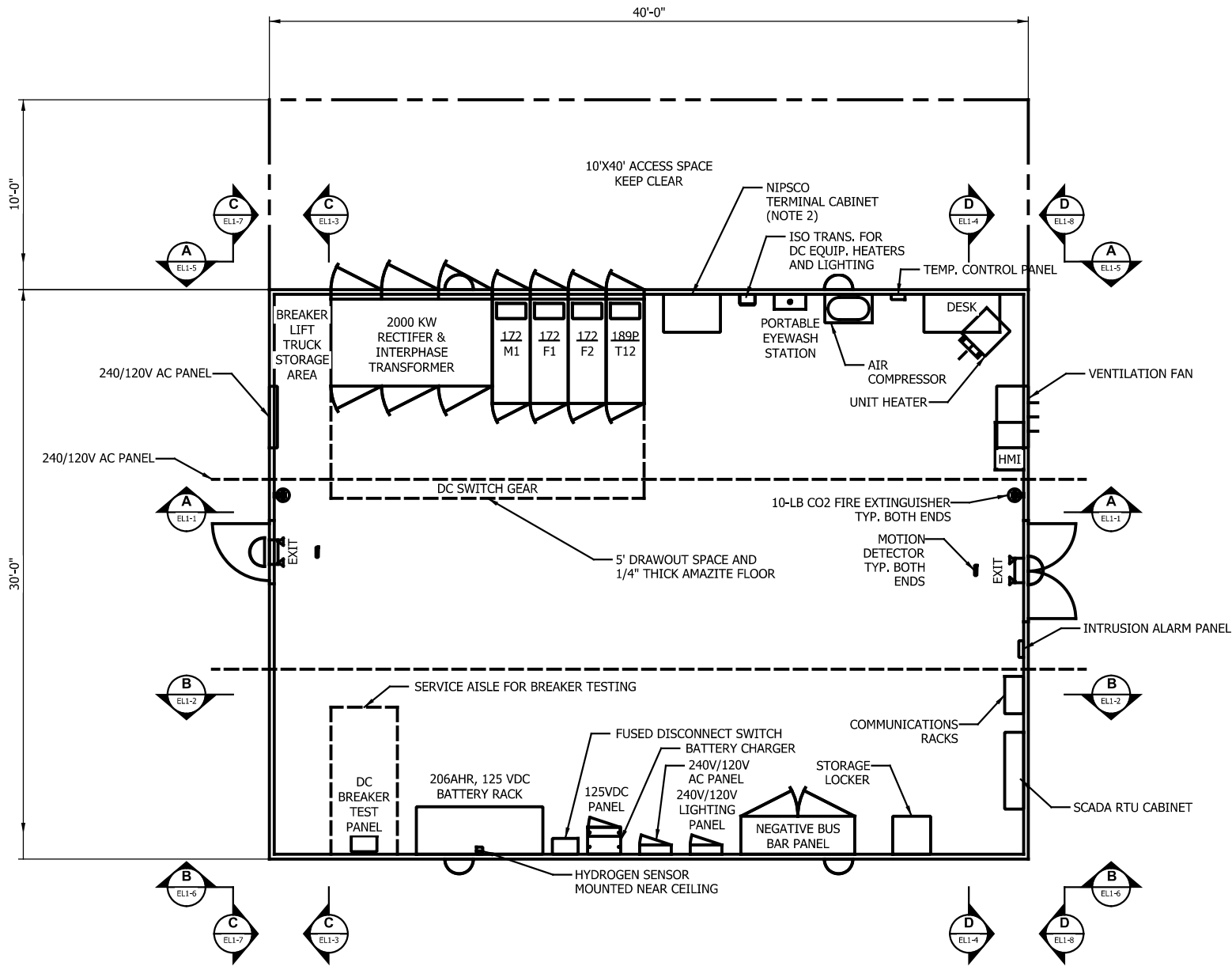
SERIES TPPL1-2 OF TPPL1-3

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #1 YARD EQUIPMENT PLAN
SYSTEM

FILENAME	SHT_WL_TP_PL_111	SHEET
SCALE	AS NOTED	207 OF 248

- NOTES
- INTERIOR EQUIPMENT SHOWN ON THIS DRAWING.
(SUBSTATION BUILDING ROOF NOT SHOWN ON THIS DRAWING)
 - NICTD ELECTRICAL INTERFACE TO THE NIPSCO EQUIPMENT IS VIA THE NIPSCO PROVIDED TERMINAL CABINET.



TPPS #1 SUBSTATION EQUIPMENT LAYOUT
Scale: 1/4" = 1'

SCALE: 1/4" = 1'

PLOT DATE: 7/19/2017 9:52:15 PM JKJELMA



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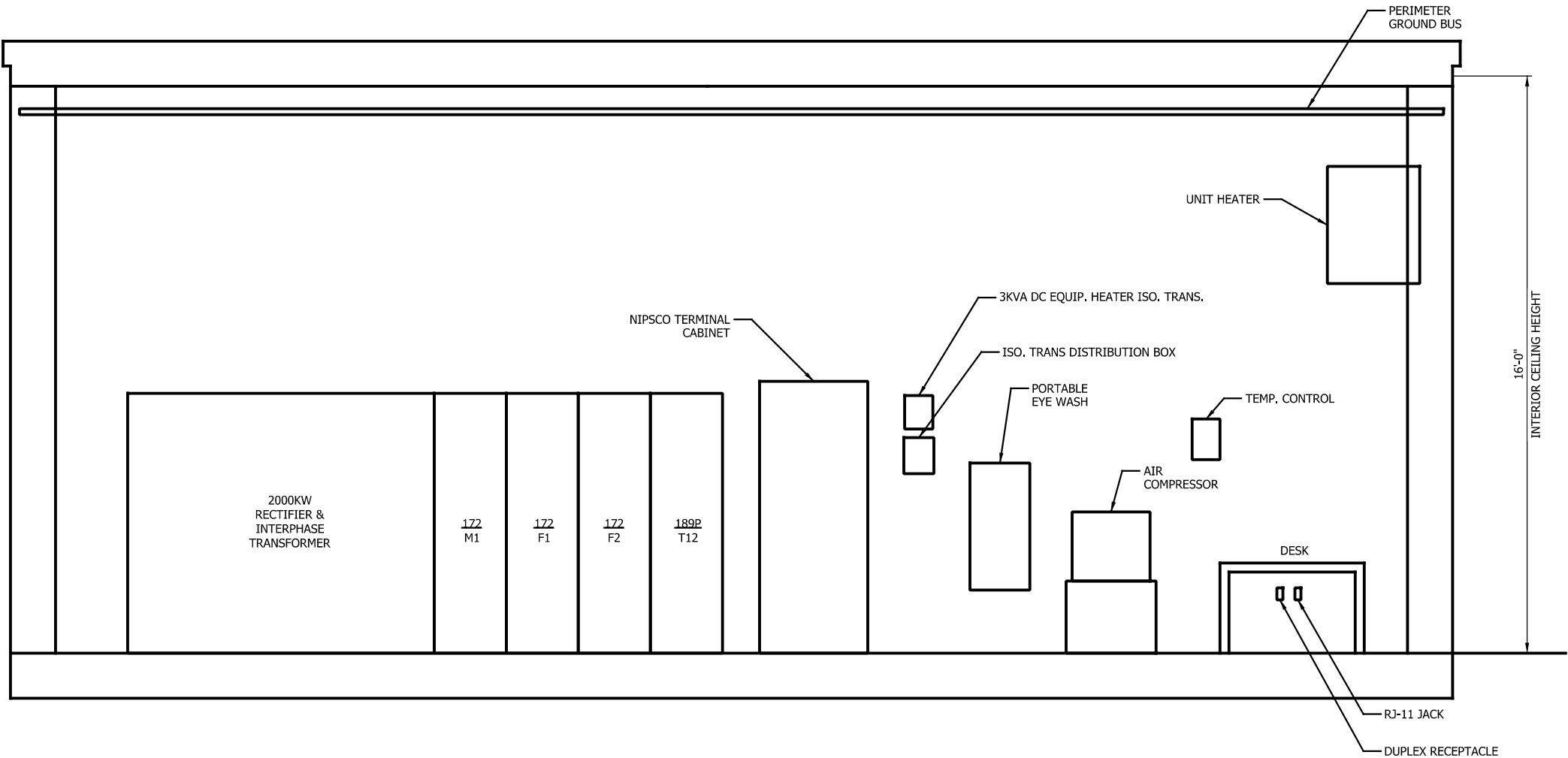
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TRANSPORTATION DISTRICT
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Chesterton, Indiana 46304



DYER TO HAMMOND, INDIANA

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DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES	TPPL1-3 OF TPPL1-3
		NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK	
		TPSS #1 SUBSTATION EQUIP LAYOUT SYSTEM	
FILENAME	SHT_WL_TP_PL_112	SHEET	
SCALE	AS NOTED	208 OF 248	



TPPS #1 SUBSTATION INTERIOR ELEVATION SECTION A-A
Scale: 1/2" = 1'

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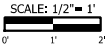
NOT FOR CONSTRUCTION

SERIES
TPEL1-1 OF TPEL1-8

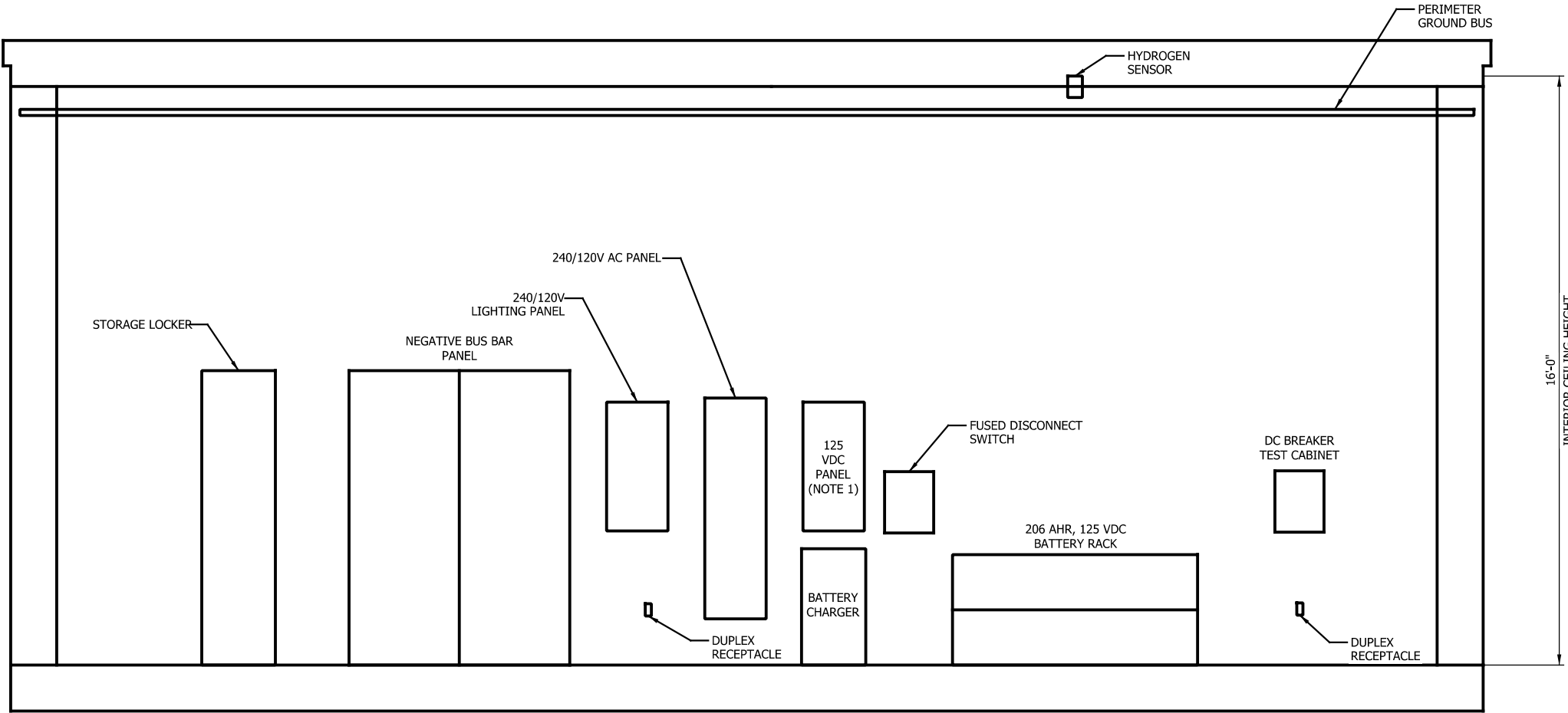
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #1 INTERIOR ELEVATION (1 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_113	SHEET
SCALE	AS NOTED	209 OF 248



- NOTES
1. 125VDC PANEL SHALL BE FLUSHED WITH THE BATTERY CHARGER.



TPPS #1 SUBSTATION INTERIOR ELEVATION SECTION B-B
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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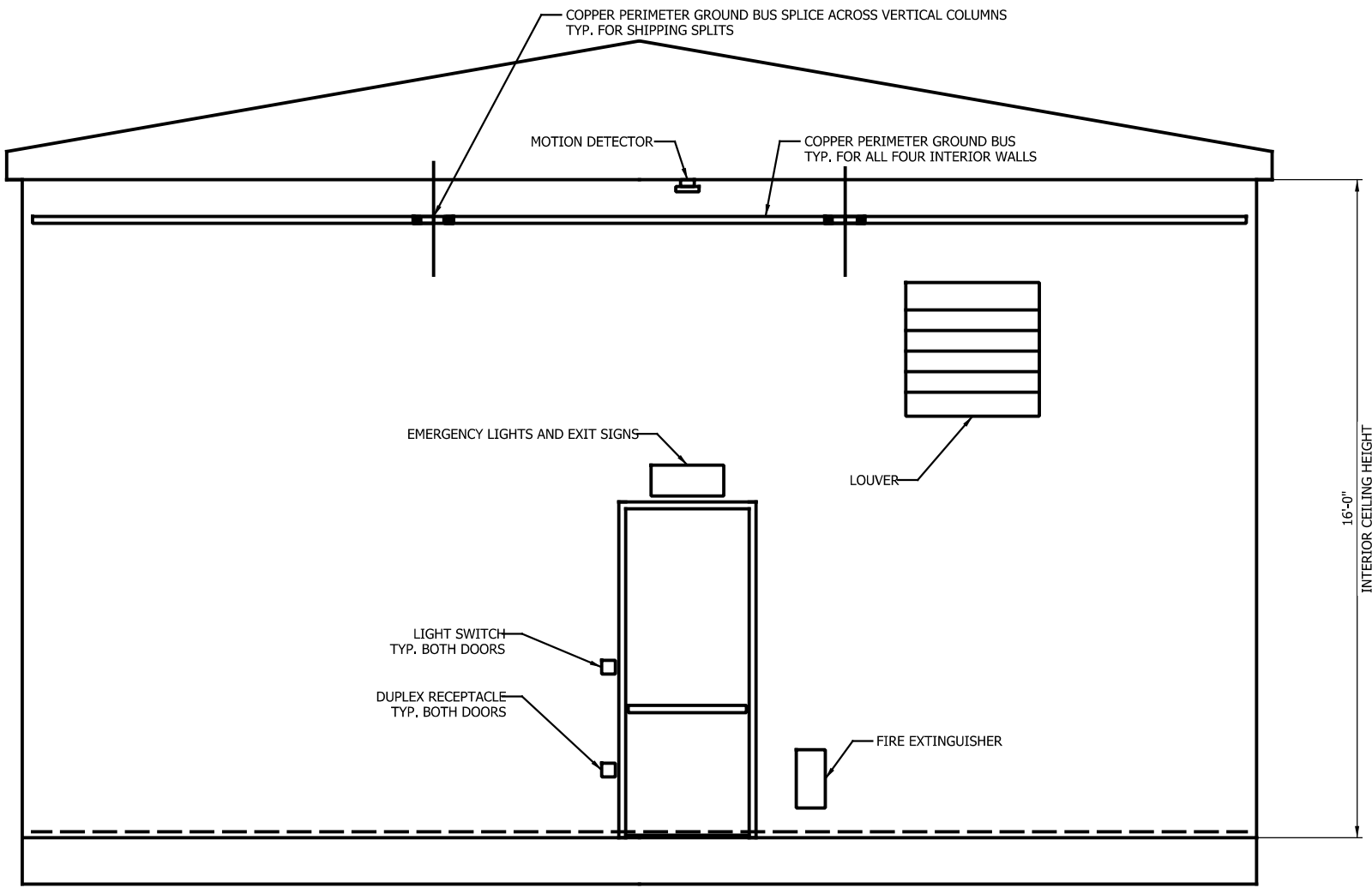
ISSUE	DATE	DESCRIPTION

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NOT FOR CONSTRUCTION		SERIES TPEL1-2 OF TPEL1-8
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #1 INTERIOR ELEVATION (2 OF 4) SYSTEM		
FILENAME	SHT_WL_TP_EL_114	SHEET
SCALE	AS NOTED	210 OF 248



TPSS #1 SUBSTATION INTERIOR ELEVATION SECTION C-C
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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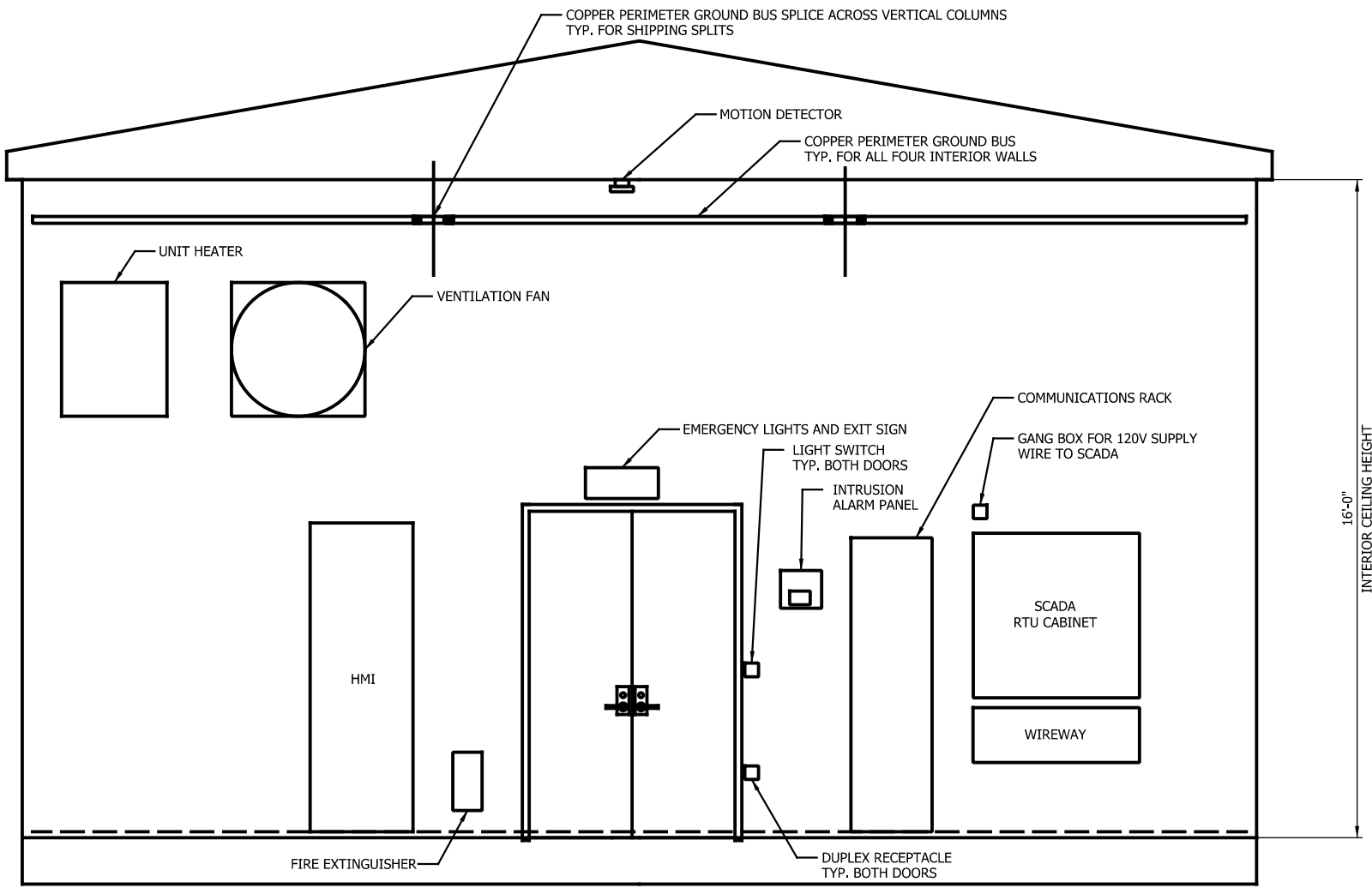
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NOT FOR CONSTRUCTION		SERIES TPEL1-3 OF TPEL1-8
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #1 INTERIOR ELEVATION (3 OF 4) SYSTEM		
FILENAME	SHT_WL_TP_EL_115	SHEET
SCALE	AS NOTED	211 OF 248



TPPS #1 SUBSTATION INTERIOR ELEVATION SECTION D-D
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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NOT FOR CONSTRUCTION		SERIES TPEL1-4 OF TPEL1-8
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #1 INTERIOR ELEVATION (4 OF 4) SYSTEM		
FILENAME	SHT_WL_TP_EL_116	SHEET
SCALE	AS NOTED	212 OF 248

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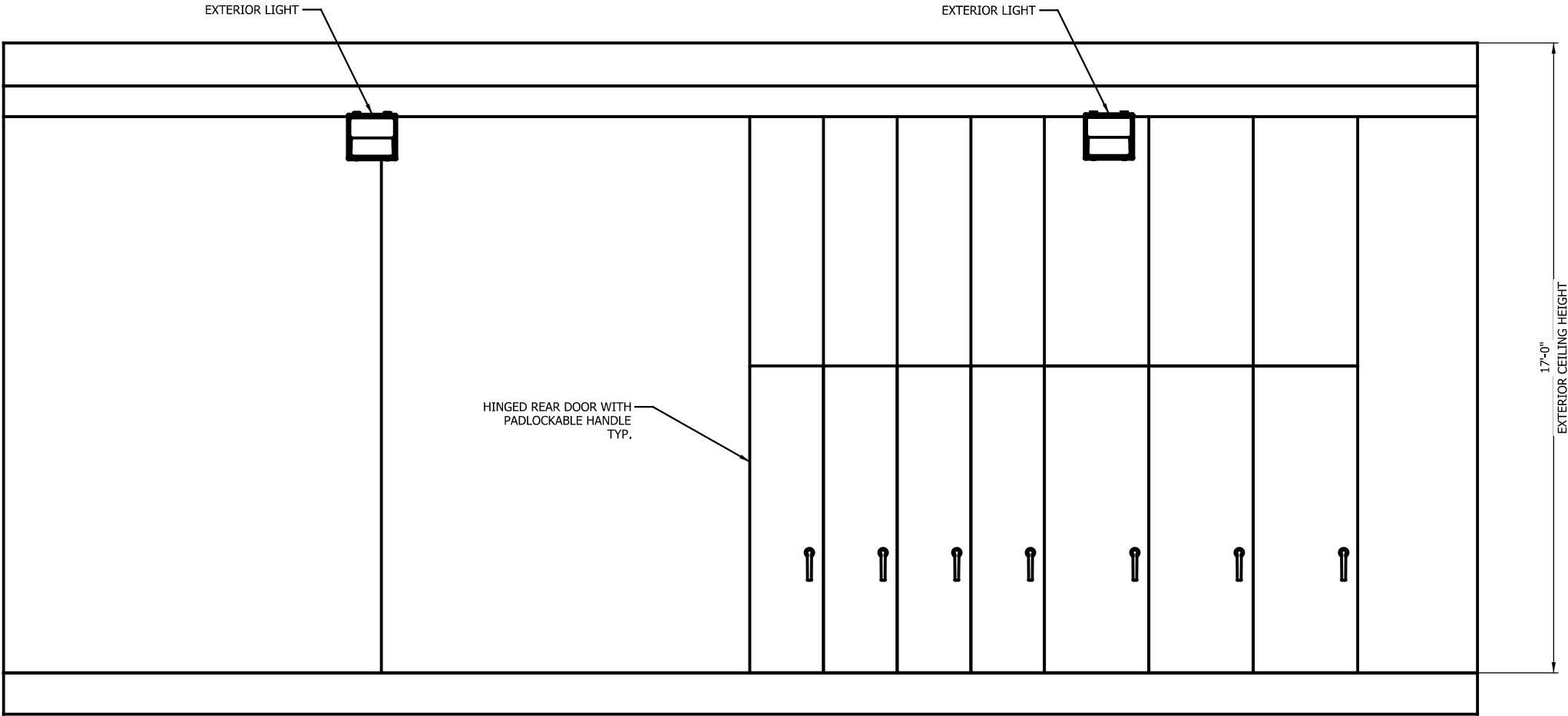
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SERIES
TPEL1-5 OF TPEL1-8

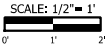
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

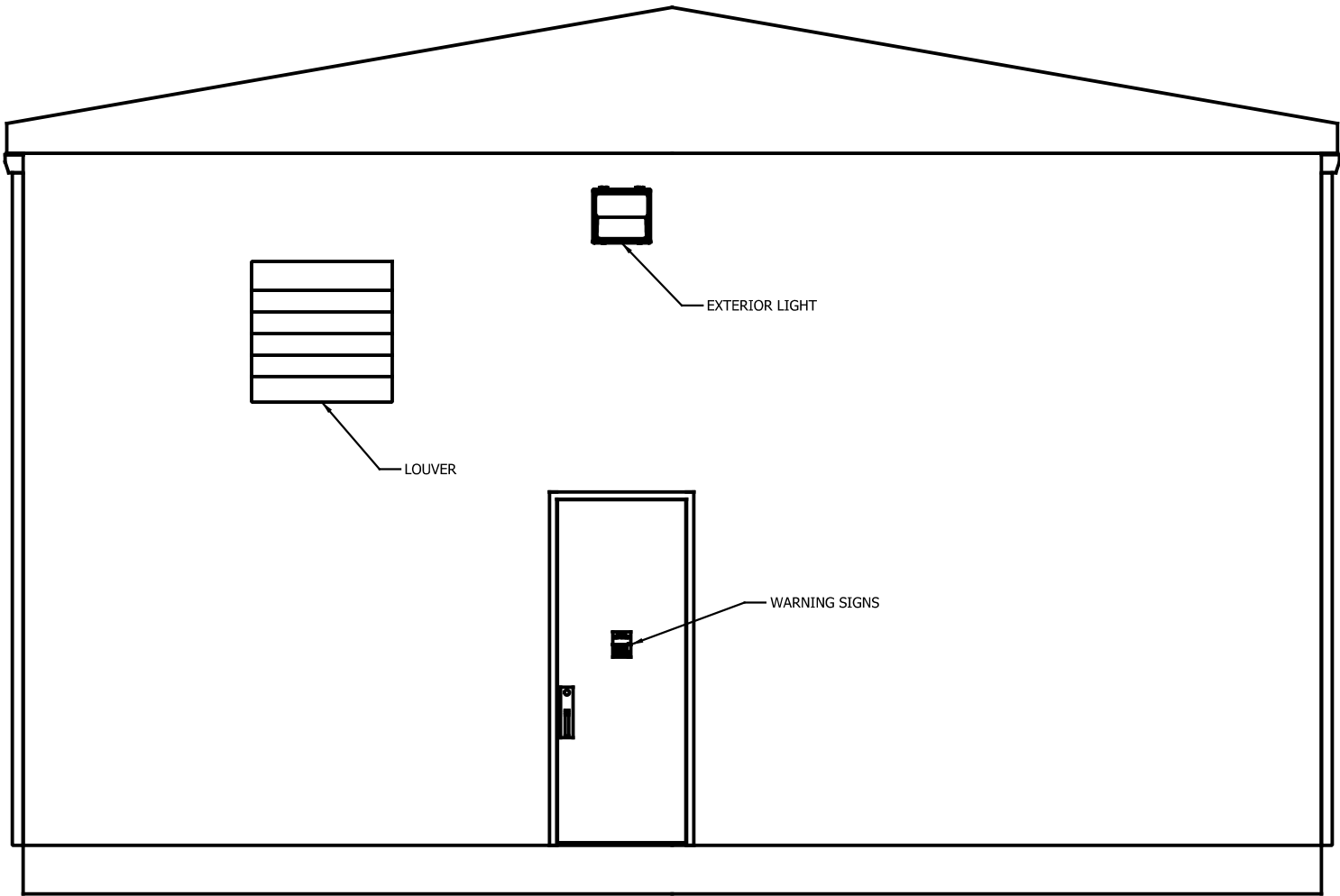
TPSS #1 EXTERIOR ELEVATION (1 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_117	SHEET
SCALE	AS NOTED	213 OF 248



TPPS #1 SUBSTATION EXTERIOR ELEVATION SECTION A-A
Scale: 1/2" = 1'





TPPS #1 SUBSTATION EXTERIOR ELEVATION SECTION C-C
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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SERIES
TPEL1-7 OF TPEL1-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #1 EXTERIOR ELEVATION (3 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_119	SHEET
SCALE	AS NOTED	215 OF 248

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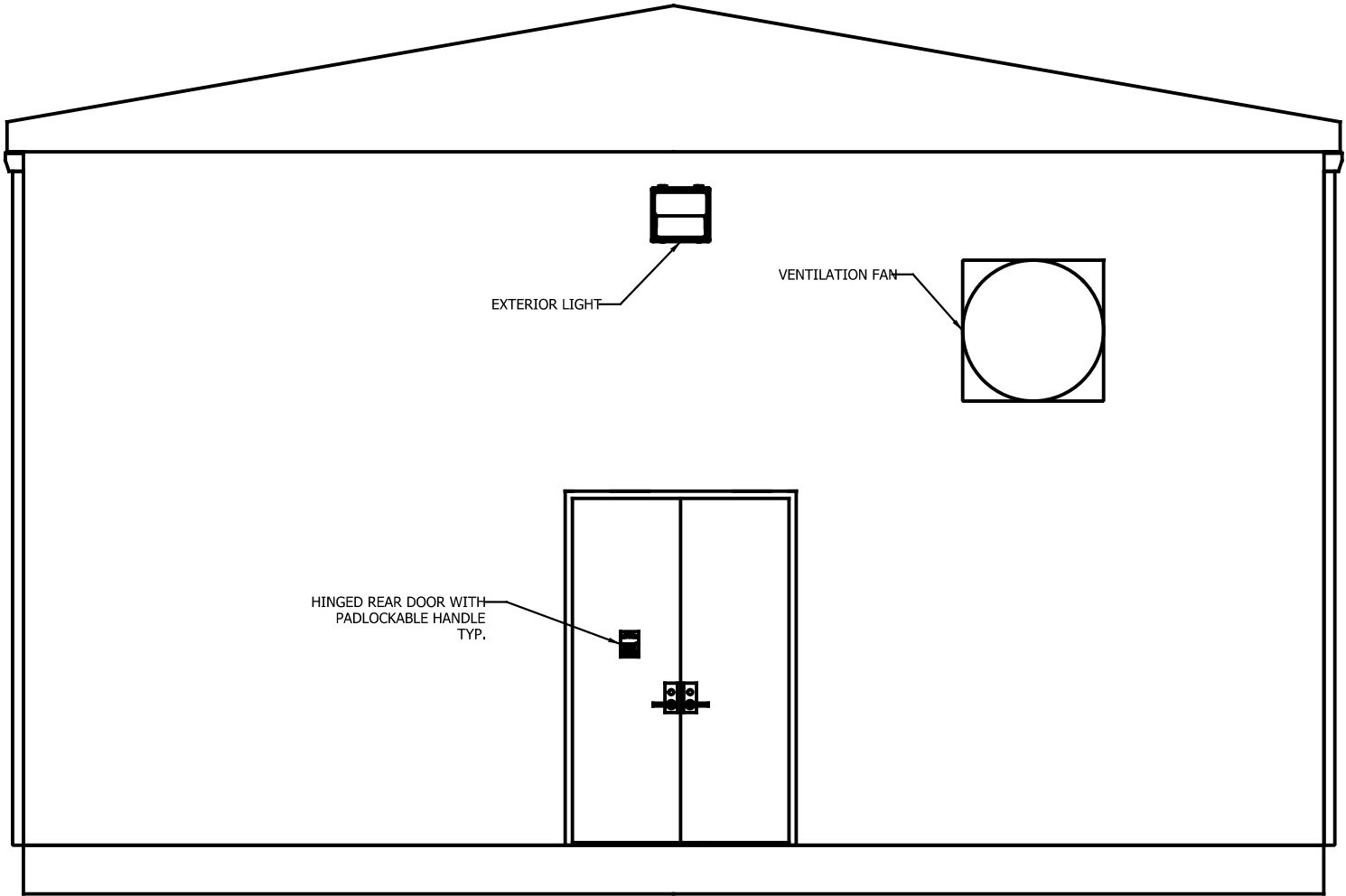
SERIES
TPEL1-8 OF TPEL1-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

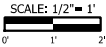
TPSS #1 EXTERIOR ELEVATION (4 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_120
SCALE	AS NOTED

SHEET
216 OF 248



TPPS #1 SUBSTATION EXTERIOR ELEVATION SECTION D-D
Scale: 1/2" = 1'



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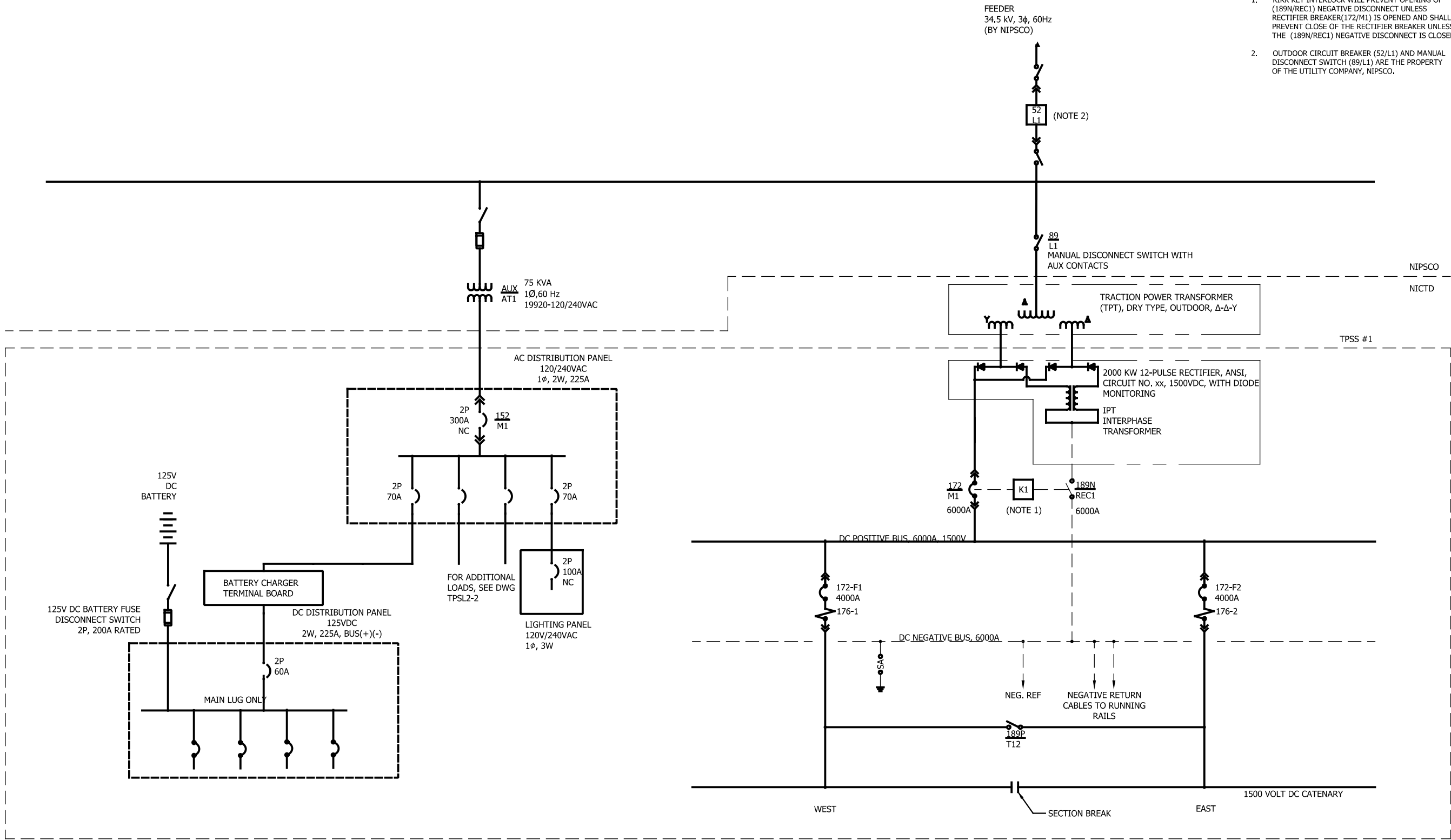


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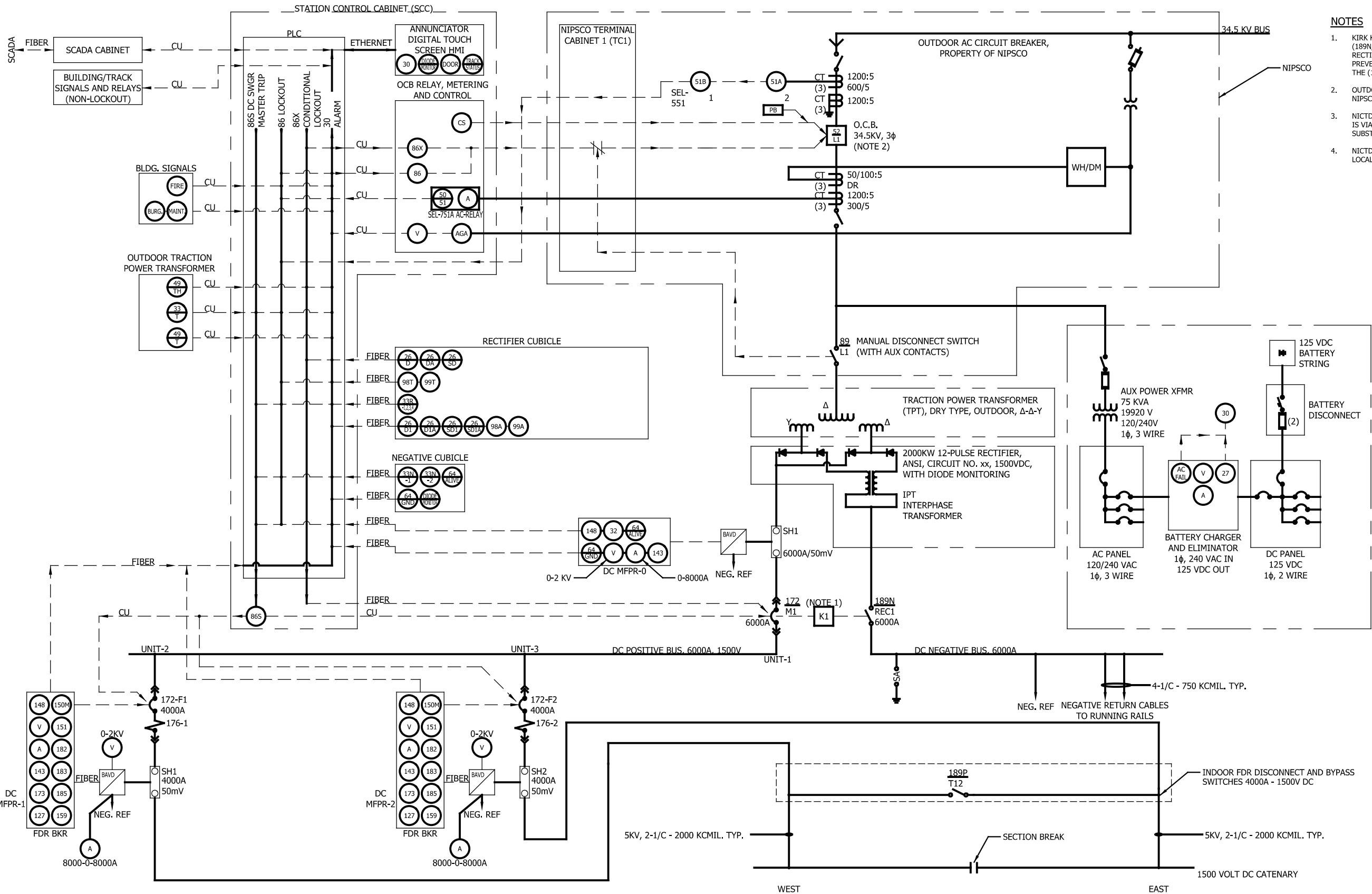
DESIGNED:	SZM
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DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES TPSL2-1 OF TPSL2-3
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #2 TP SINGLE LINE DIAGRAM SYSTEM		
FILENAME	SHT_WL_TP_SL_201	SHEET
SCALE	AS NOTED	217 OF 248

- NOTES
- KIRK KEY INTERLOCK WILL PREVENT OPENING OF (189N/REC1) NEGATIVE DISCONNECT UNLESS RECTIFIER BREAKER(172/M1) IS OPENED AND SHALL PREVENT CLOSE OF THE RECTIFIER BREAKER UNLESS THE (189N/REC1) NEGATIVE DISCONNECT IS CLOSED.
 - OUTDOOR CIRCUIT BREAKER (52/L1) AND MANUAL DISCONNECT SWITCH (89/L1) ARE THE PROPERTY OF THE UTILITY COMPANY, NIPSCO.







- NOTES**
1. KIRK KEY INTERLOCK WILL PREVENT OPENING OF (189N/REC1) NEGATIVE DISCONNECT UNLESS RECTIFIER BREAKER (172/M1) IS OPENED AND SHALL PREVENT CLOSE OF THE RECTIFIER BREAKER UNLESS THE (189N/REC1) NEGATIVE DISCONNECT IS CLOSED.
 2. OUTDOOR OCB IS THE PROPERTY OF THE UTILITY COMPANY, NIPSCO.
 3. NICTD ELECTRICAL INTERFACE TO THE NIPSCO EQUIPMENT IS VIA THE NIPSCO TERMINAL CABINET LOCATED IN NEW SUBSTATION.
 4. NICTD HAS THE ABILITY TO TRIP/CLOSE THE NIPSCO OCB LOCALLY.

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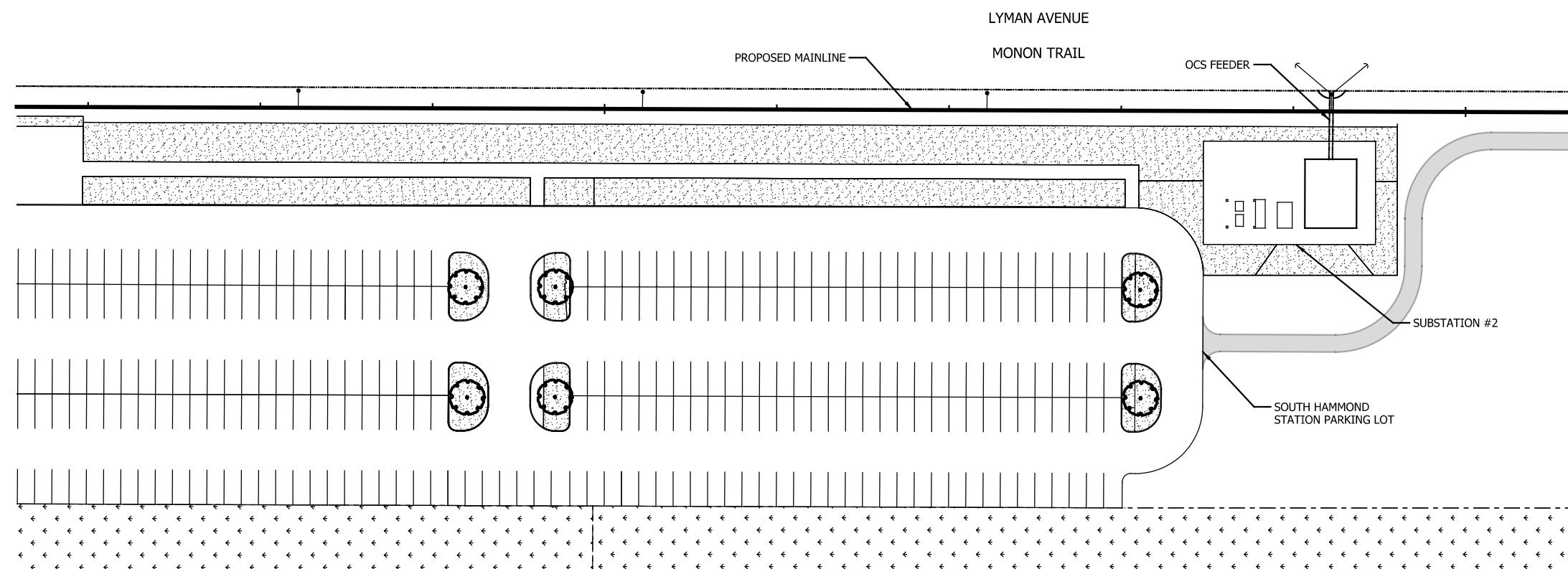
NOT FOR CONSTRUCTION

SERIES TPSSL2-3 OF TPSSL2-3


NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK

TPSS #2 PROTECTION SCHEME SYSTEM

FILENAME	SHT_WL_TP_SL_203	SHEET
SCALE	AS NOTED	219 OF 248



SCALE: 1" = 40'



0' 20' 40'

PLOT DATE: 7/19/2017
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DATE:	07/21/17

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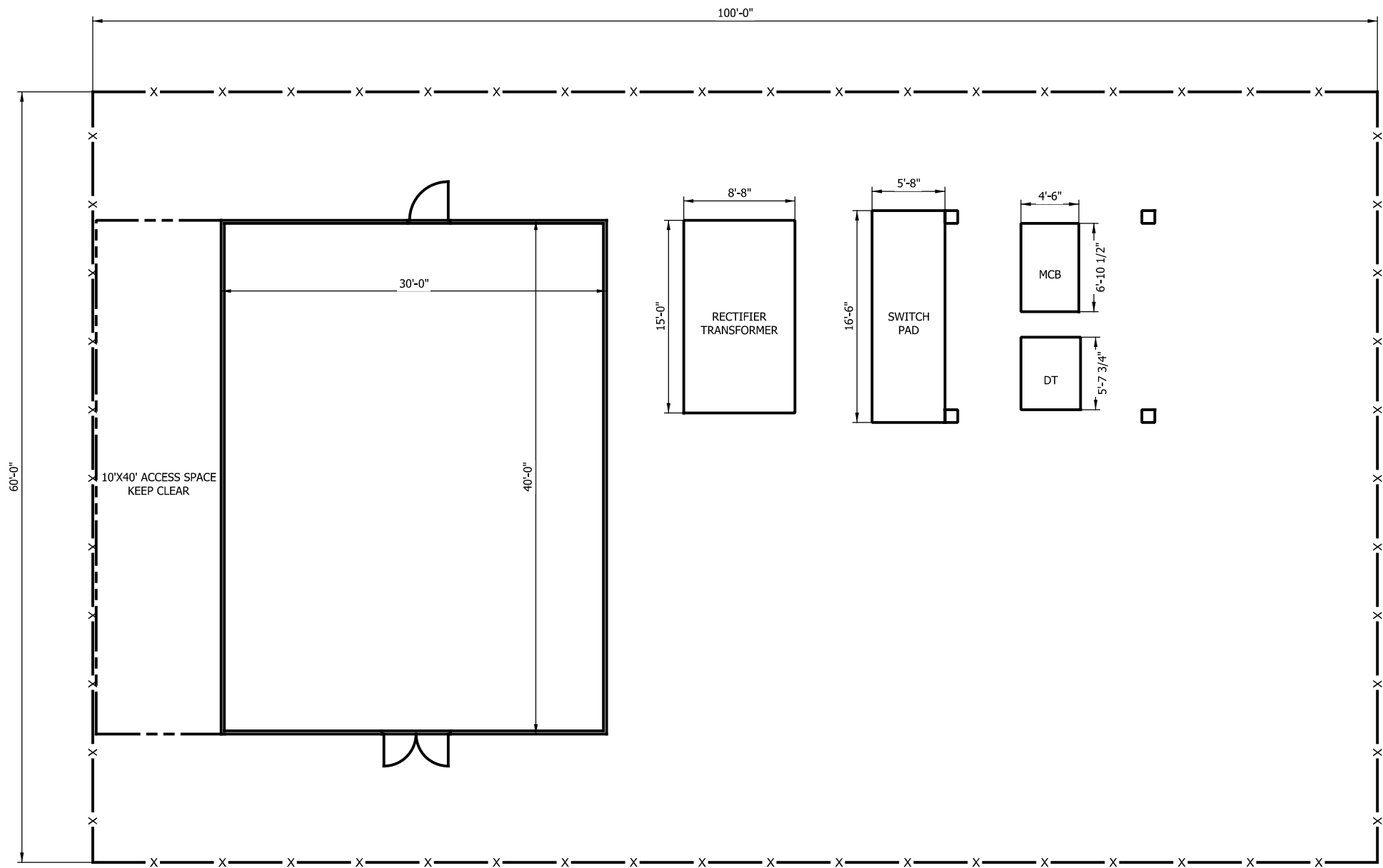
SERIES
TPPL2-1 OF TPPL2-3

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

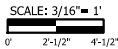
TPSS #2 AREA PLAN
SYSTEM

FILENAME	SHT_WL_TP_PL_210	SHEET 220 OF 248
SCALE	AS NOTED	

- NOTES
1. INTERIOR EQUIPMENT NOT SHOWN ON THIS DRAWING.
 2. FOR SUBSTATION EQUIPMENT LAYOUT, SEE DRAWING TP_PL_2-2.



TPPS #2 YARD EQUIPMENT PLAN
Scale: 3/16" = 1'



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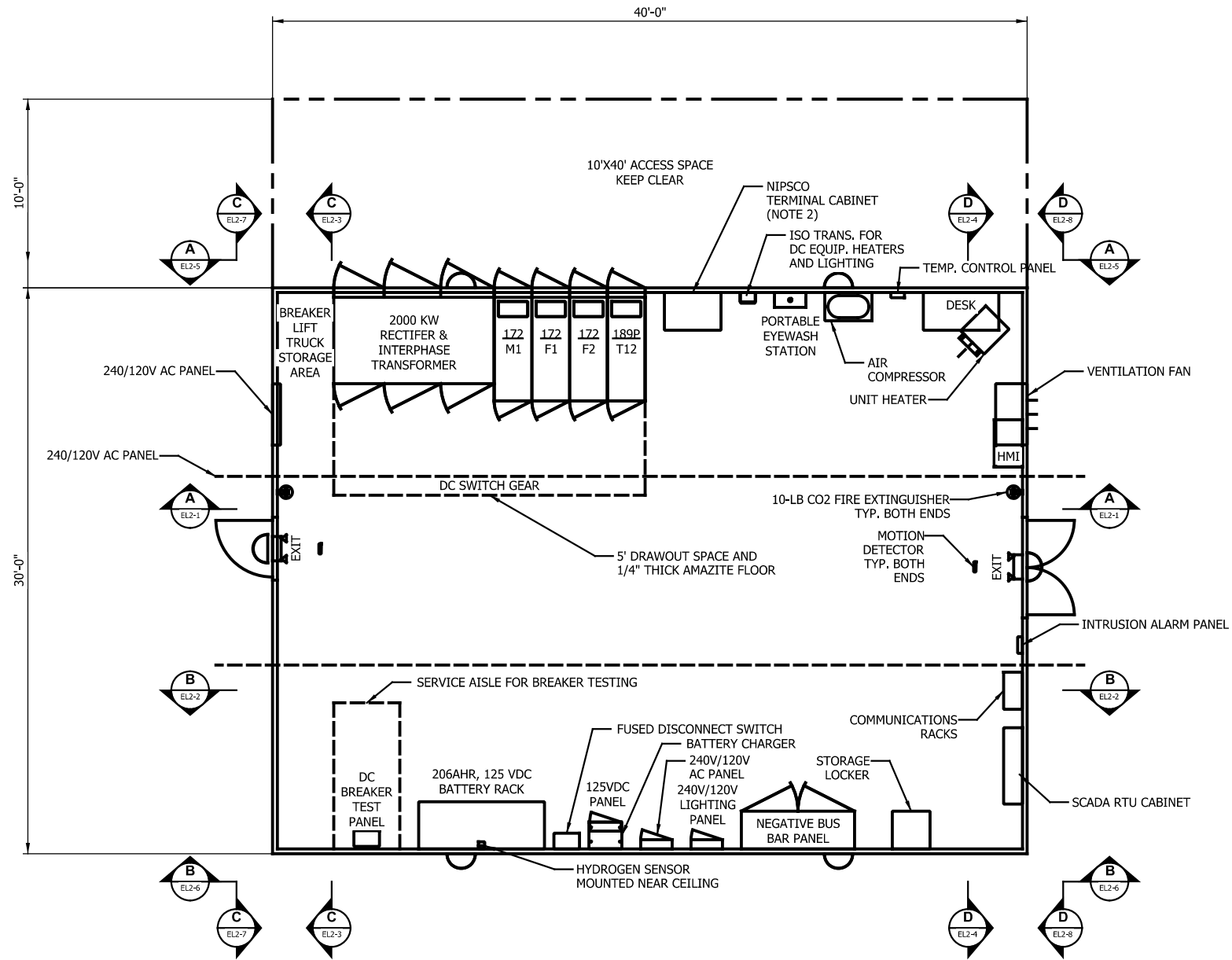
SERIES TPPL2-2 OF TPPL2-3

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #2 YARD EQUIPMENT PLAN
SYSTEM

FILENAME	SHT_WL_TP_PL_211	SHEET
SCALE	AS NOTED	221 OF 248

- NOTES
- INTERIOR EQUIPMENT SHOWN ON THIS DRAWING.
(SUBSTATION BUILDING ROOF NOT SHOWN ON THIS DRAWING)
 - NICTD ELECTRICAL INTERFACE TO THE NIPSCO EQUIPMENT IS VIA THE NIPSCO PROVIDED TERMINAL CABINET.



TPPS #2 SUBSTATION EQUIPMENT LAYOUT
Scale: 1/4" = 1'

SCALE: 1/4" = 1'
0' 4' 8'

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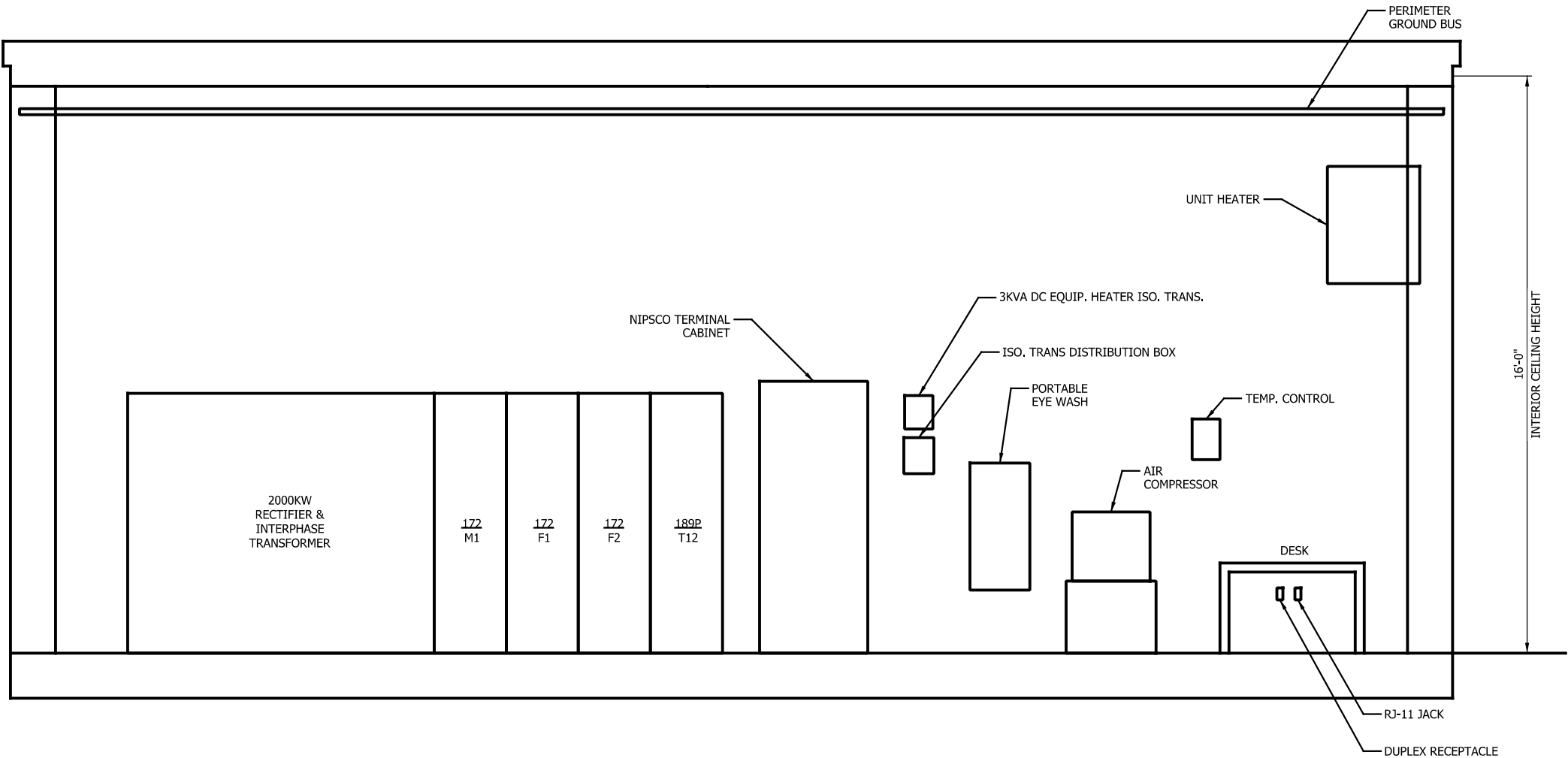


ISSUE	DATE	DESCRIPTION

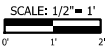


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NOT FOR CONSTRUCTION		SERIES TPPL2-3 OF TPPL2-3
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #2 SUBSTATION EQUIP LAYOUT SYSTEM		
FILENAME	SHT_WL_TP_PL_212	SHEET
SCALE	AS NOTED	222 OF 248



TPPS #2 SUBSTATION INTERIOR ELEVATION SECTION A-A
Scale: 1/2" = 1'



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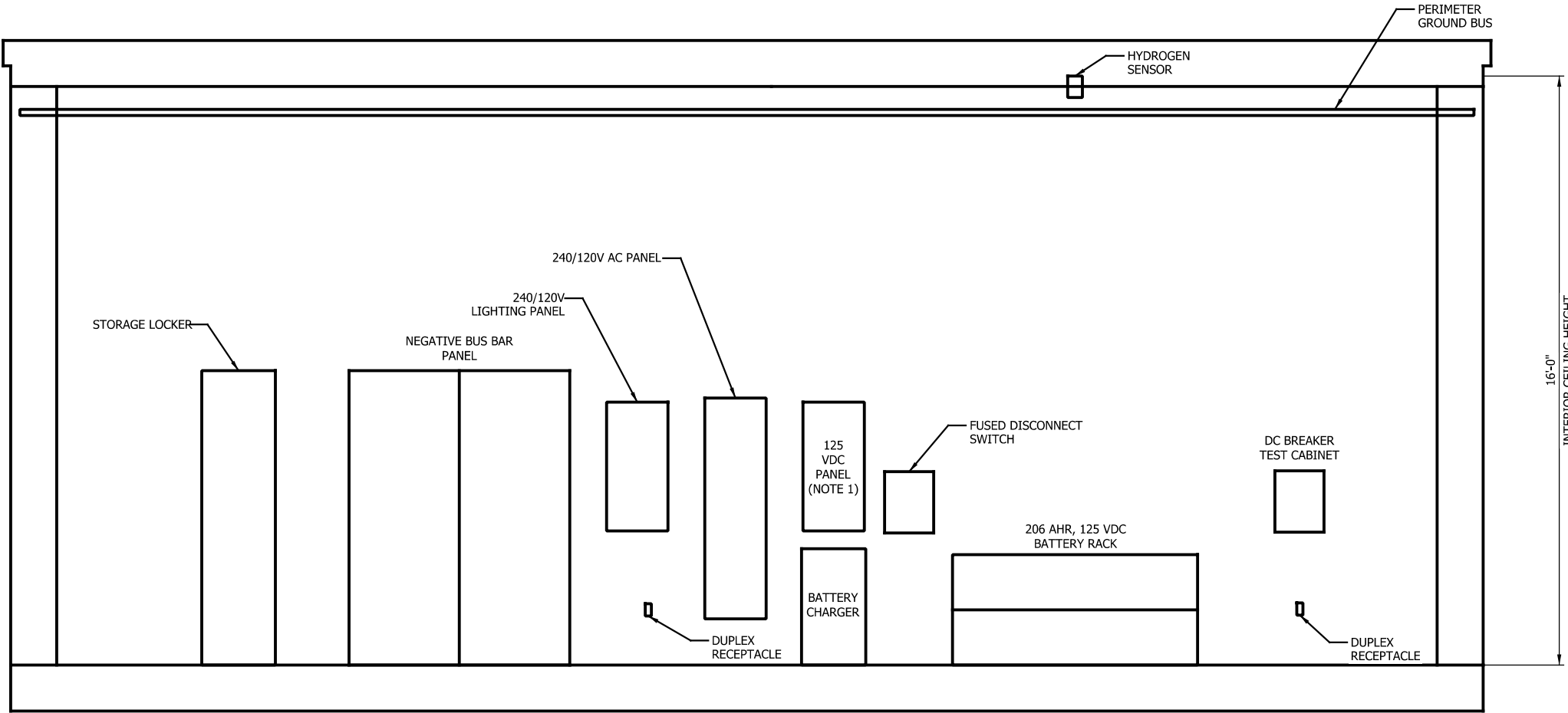
SERIES
TPEL2-1 OF TPEL2-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #2 INTERIOR ELEVATION (1 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_213	SHEET
SCALE	AS NOTED	223 OF 248

- NOTES
1. 125VDC PANEL SHALL BE FLUSHED WITH THE BATTERY CHARGER.



TPPS #2 SUBSTATION INTERIOR ELEVATION SECTION B-B
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

PLOT DATE: 7/19/2017 9:54:56 PM JKJELMA

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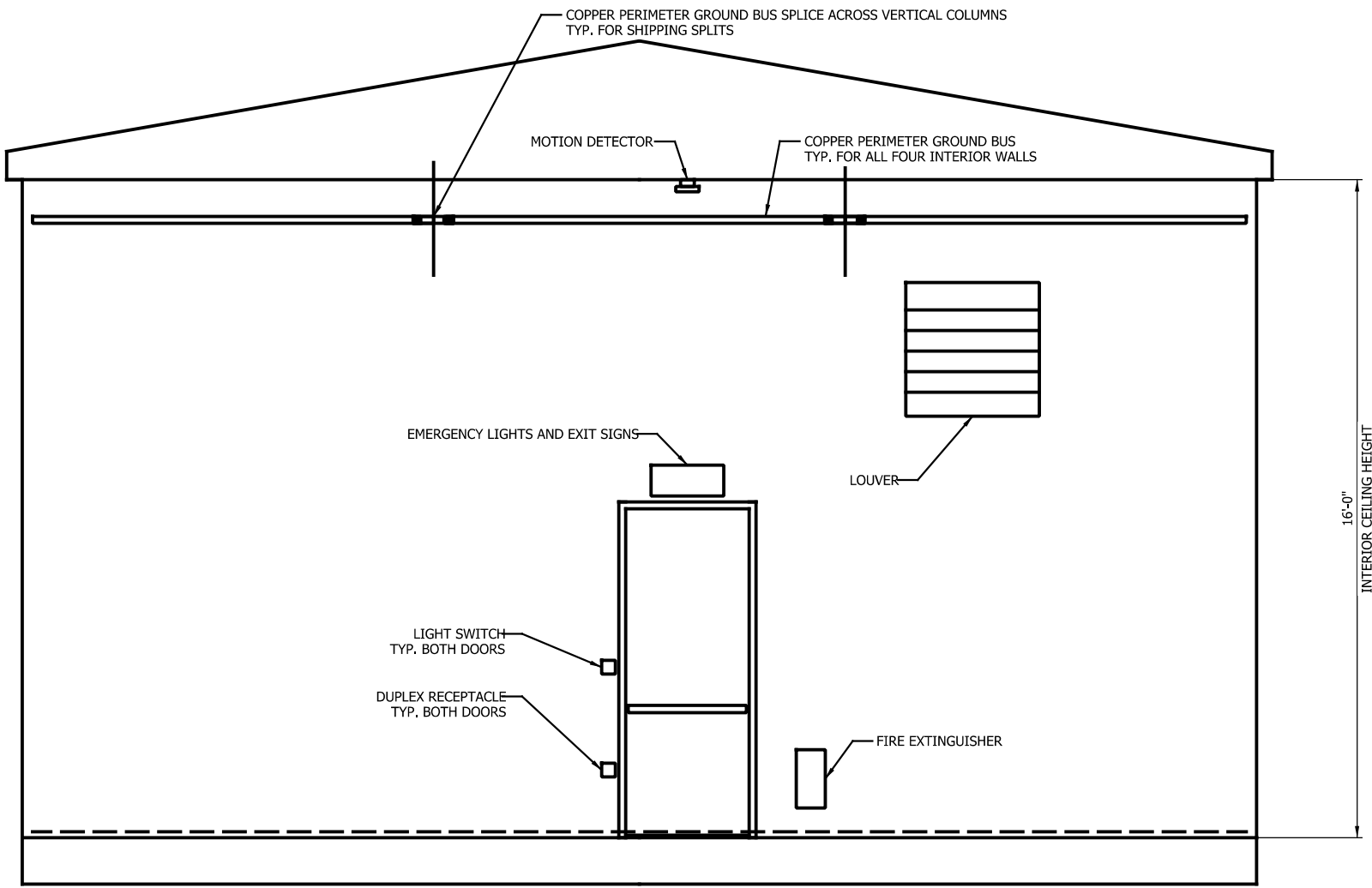
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NOT FOR CONSTRUCTION		SERIES TPEL2-2 OF TPEL2-8
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #2 INTERIOR ELEVATION (2 OF 4) SYSTEM		
FILENAME	SHT_WL_TP_EL_214	SHEET 224 OF 248
SCALE	AS NOTED	



TPSS #2 SUBSTATION INTERIOR ELEVATION SECTION C-C
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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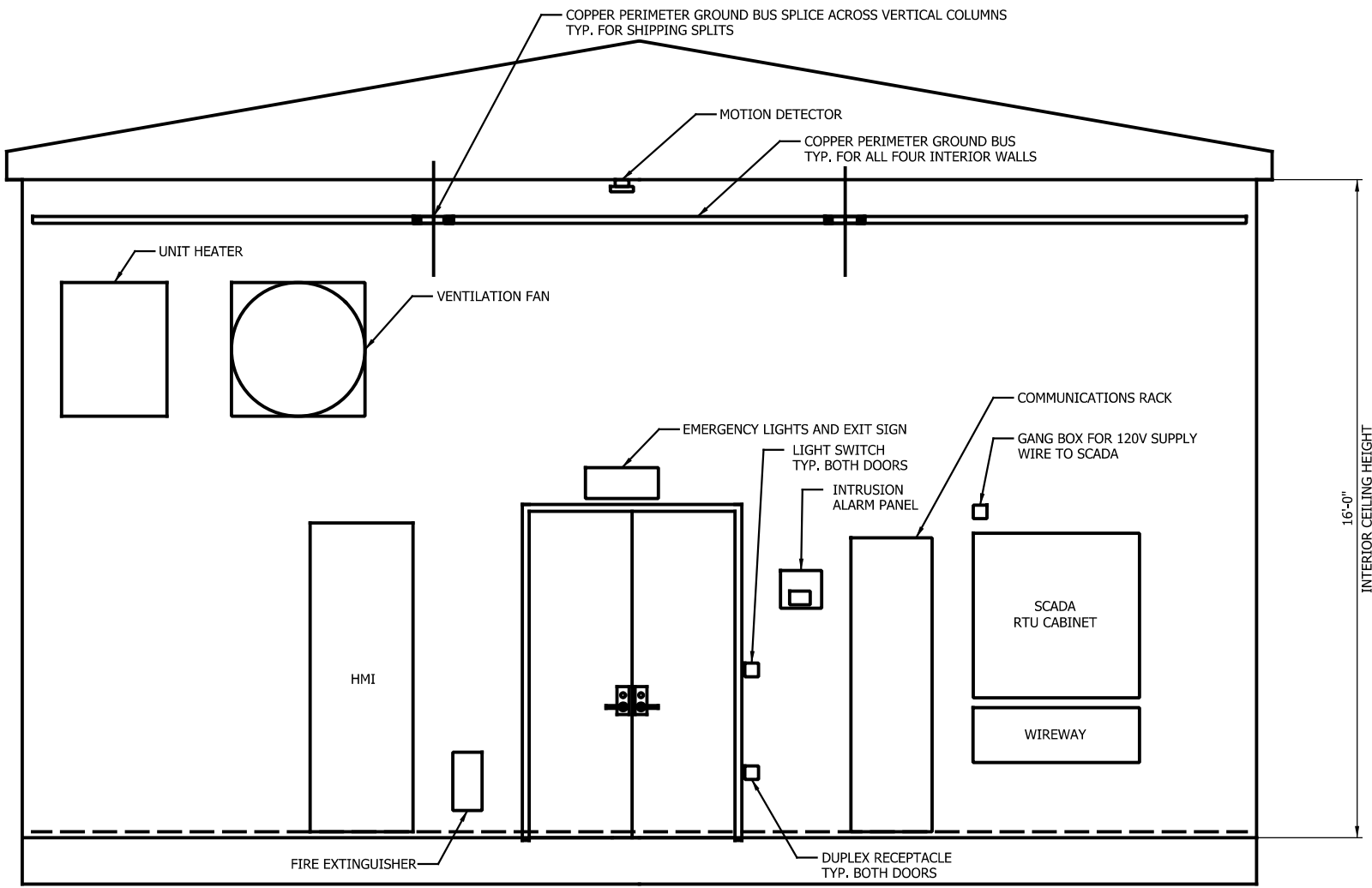
NOT FOR CONSTRUCTION

SERIES
TPEL2-3 OF TPEL2-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #2 INTERIOR ELEVATION (3 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_215	SHEET
SCALE	AS NOTED	225 OF 248



TPSS #2 SUBSTATION INTERIOR ELEVATION SECTION D-D
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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SERIES
TPEL2-4 OF TPEL2-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #2 INTERIOR ELEVATION (4 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_216	SHEET
SCALE	AS NOTED	226 OF 248

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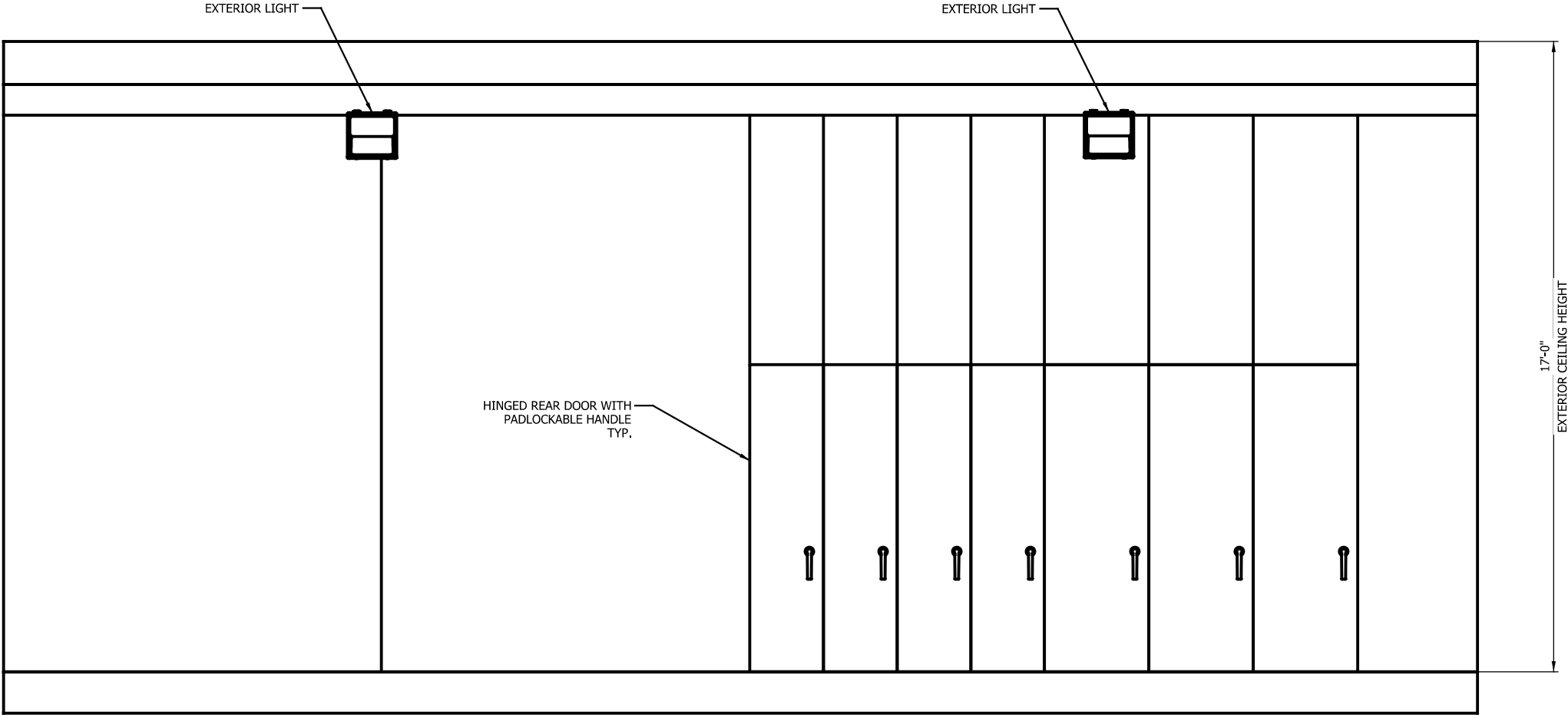
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SERIES
TPEL2-5 OF TPEL2-8

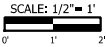
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #2 EXTERIOR ELEVATION (1 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_217	SHEET
SCALE	AS NOTED	227 OF 248



TPPS #2 SUBSTATION EXTERIOR ELEVATION SECTION A-A
Scale: 1/2" = 1'



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WEST LAKE
CORRIDOR

DYER TO HAMMOND, INDIANA

DESIGNED:	SZM
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DATE:	07/21/17

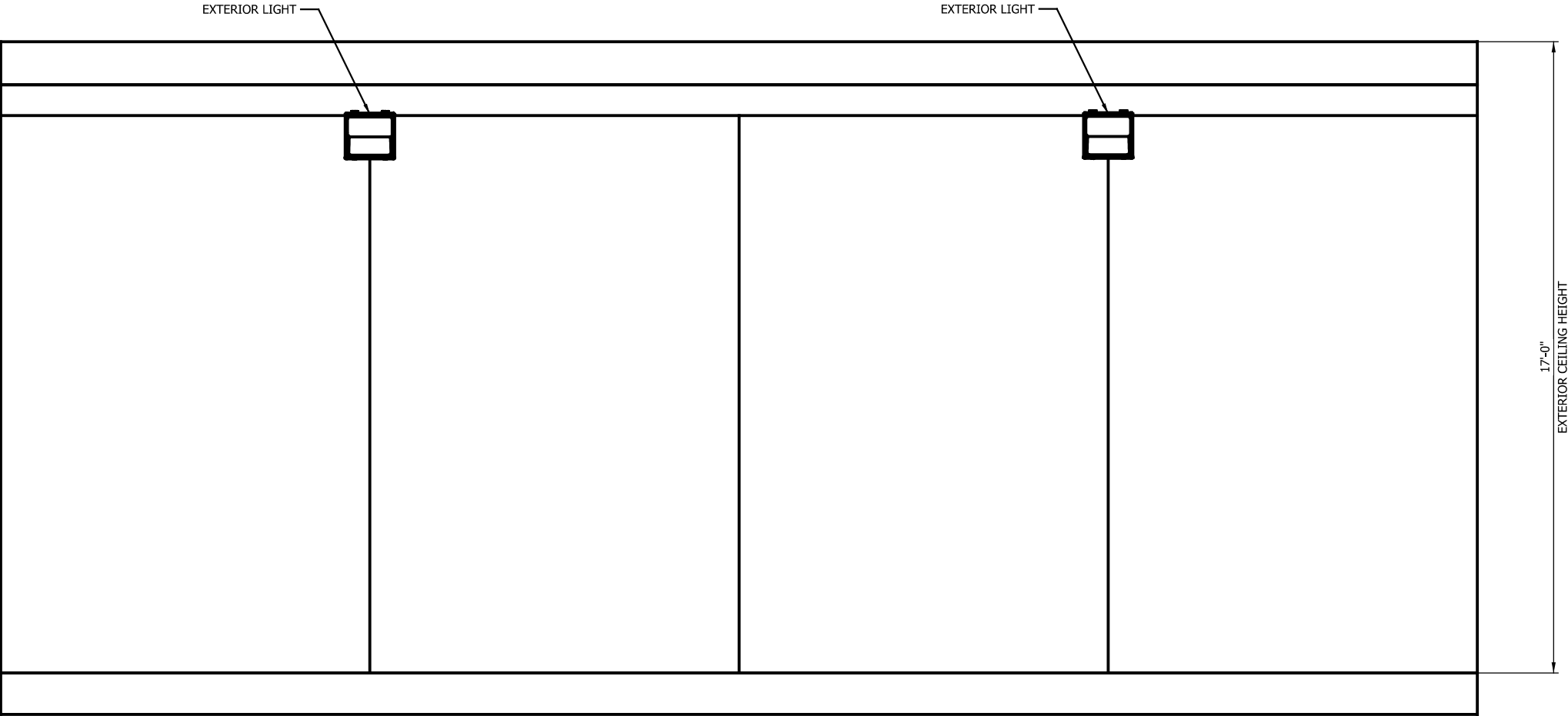
NOT FOR CONSTRUCTION

SERIES
TPEL2-6 OF TPEL2-8

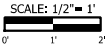
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

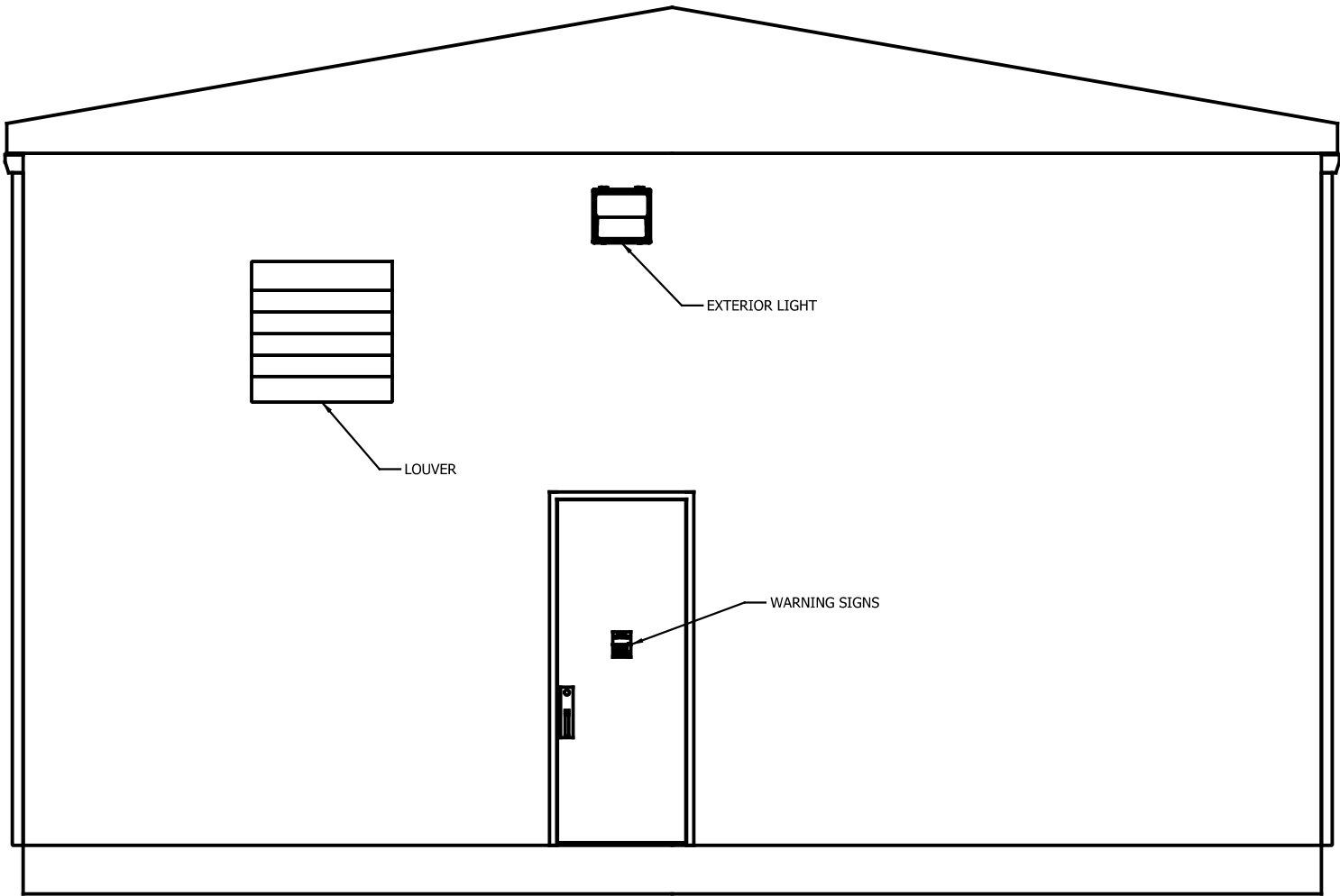
TPSS #2 EXTERIOR ELEVATION (2 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_218	SHEET
SCALE	AS NOTED	228 OF 248



TPPS #2 SUBSTATION EXTERIOR ELEVATION SECTION B-B
Scale: 1/2" = 1'





TPPS #2 SUBSTATION EXTERIOR ELEVATION SECTION C-C
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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SERIES
TPEL2-7 OF TPEL2-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #2 EXTERIOR ELEVATION (3 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_219	SHEET
SCALE	AS NOTED	229 OF 248

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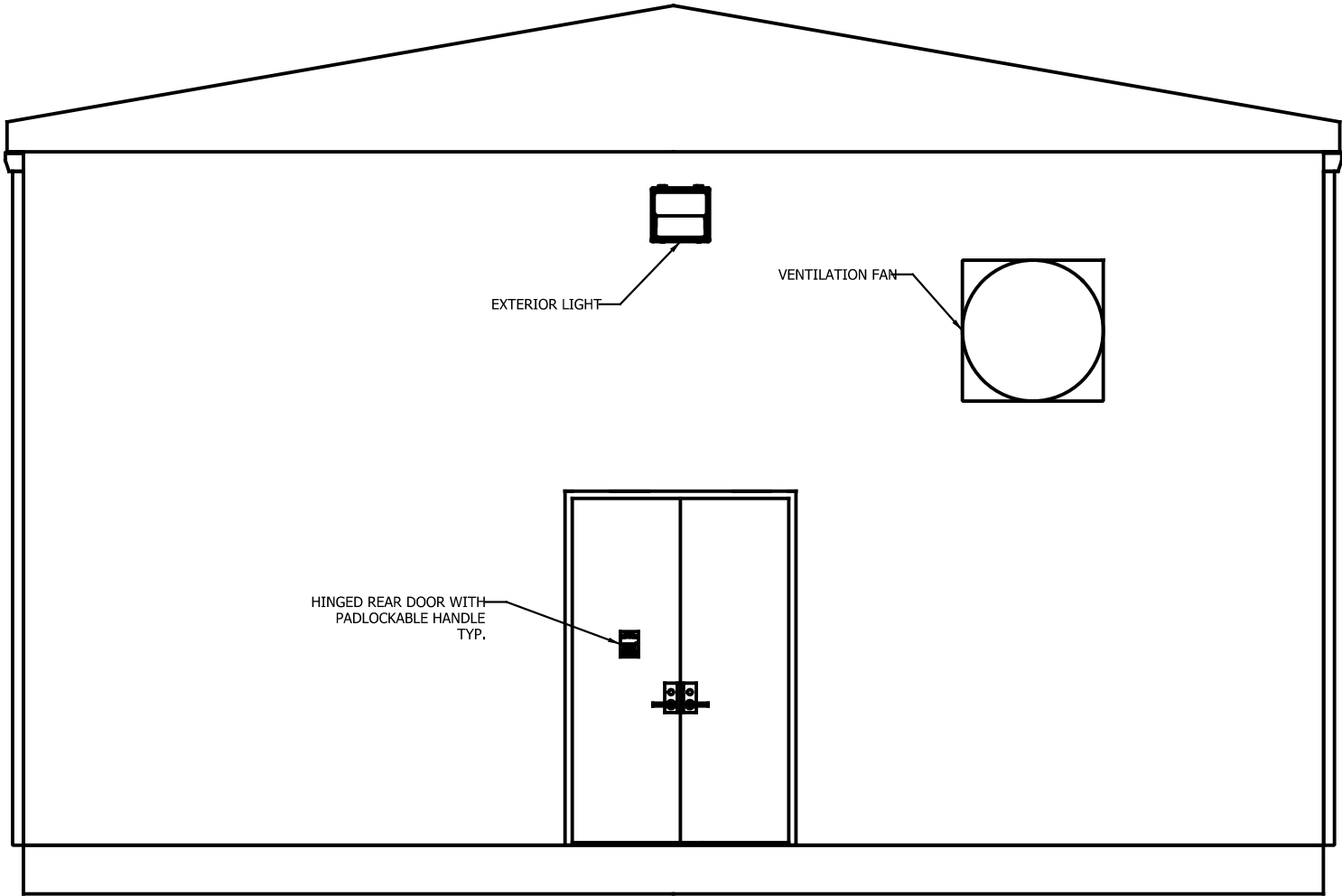
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SERIES
TPEL2-8 OF TPEL2-8

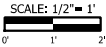
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #2 EXTERIOR ELEVATION (4 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_220	SHEET
SCALE	AS NOTED	230 OF 248



TPPS #2 SUBSTATION EXTERIOR ELEVATION SECTION D-D
Scale: 1/2" = 1'



PLOT DATE: 7/19/2017 9:56:07 PM JKJELLM



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NOT FOR CONSTRUCTION		SERIES TPSL3-1 OF TPSL3-3
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #3 TP SINGLE LINE DIAGRAM SYSTEM		
FILENAME	SHT_WL_TP_SL_301	SHEET
SCALE	AS NOTED	231 OF 248

1. FOR TRACTION POWER SINGLE LINE DIAGRAM, SEE DRAWING TP_SL3-1.



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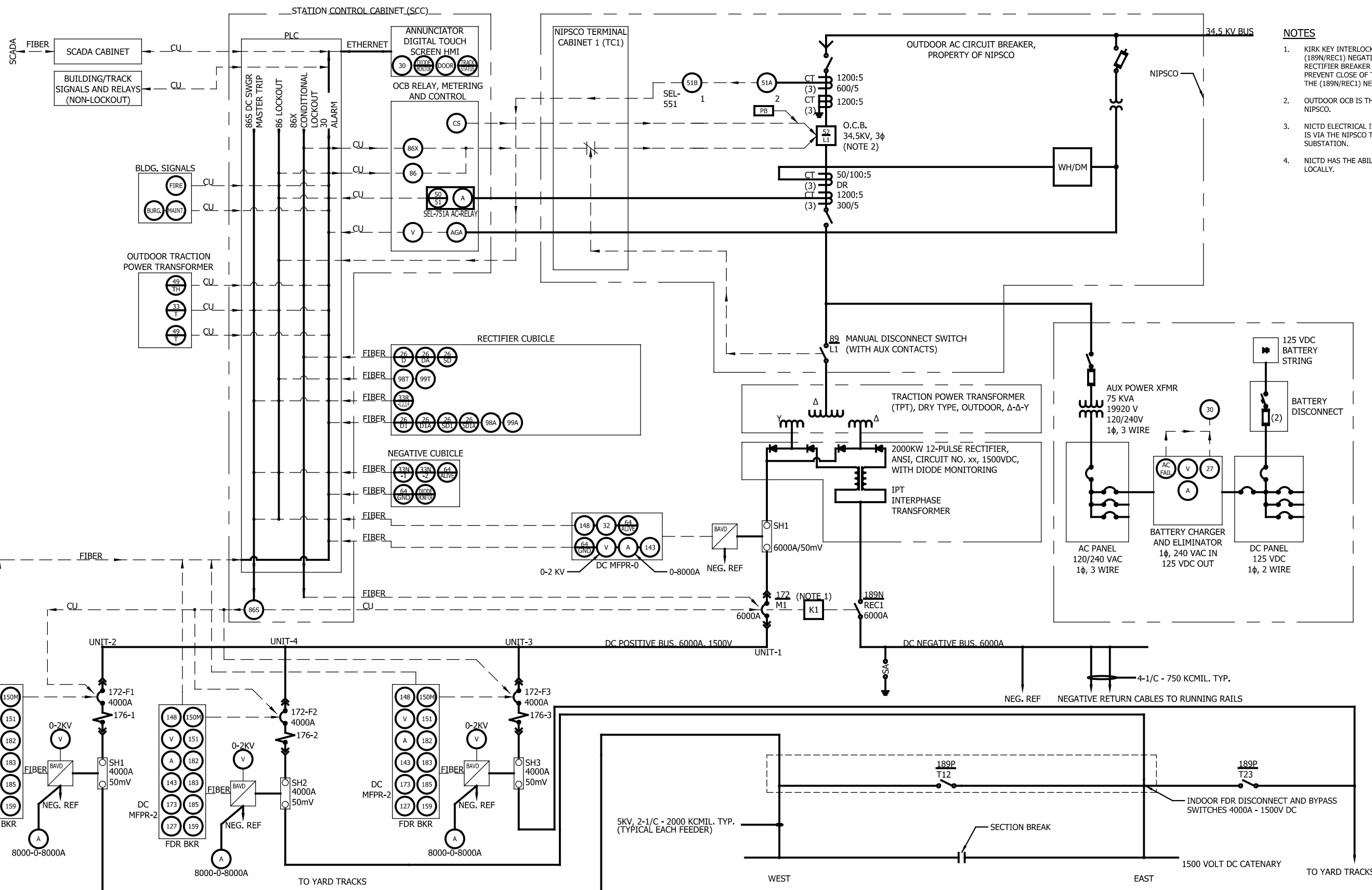
SERIES
TPSL3-3 OF TPSL3-3

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 PROTECTION SCHEME SYSTEM

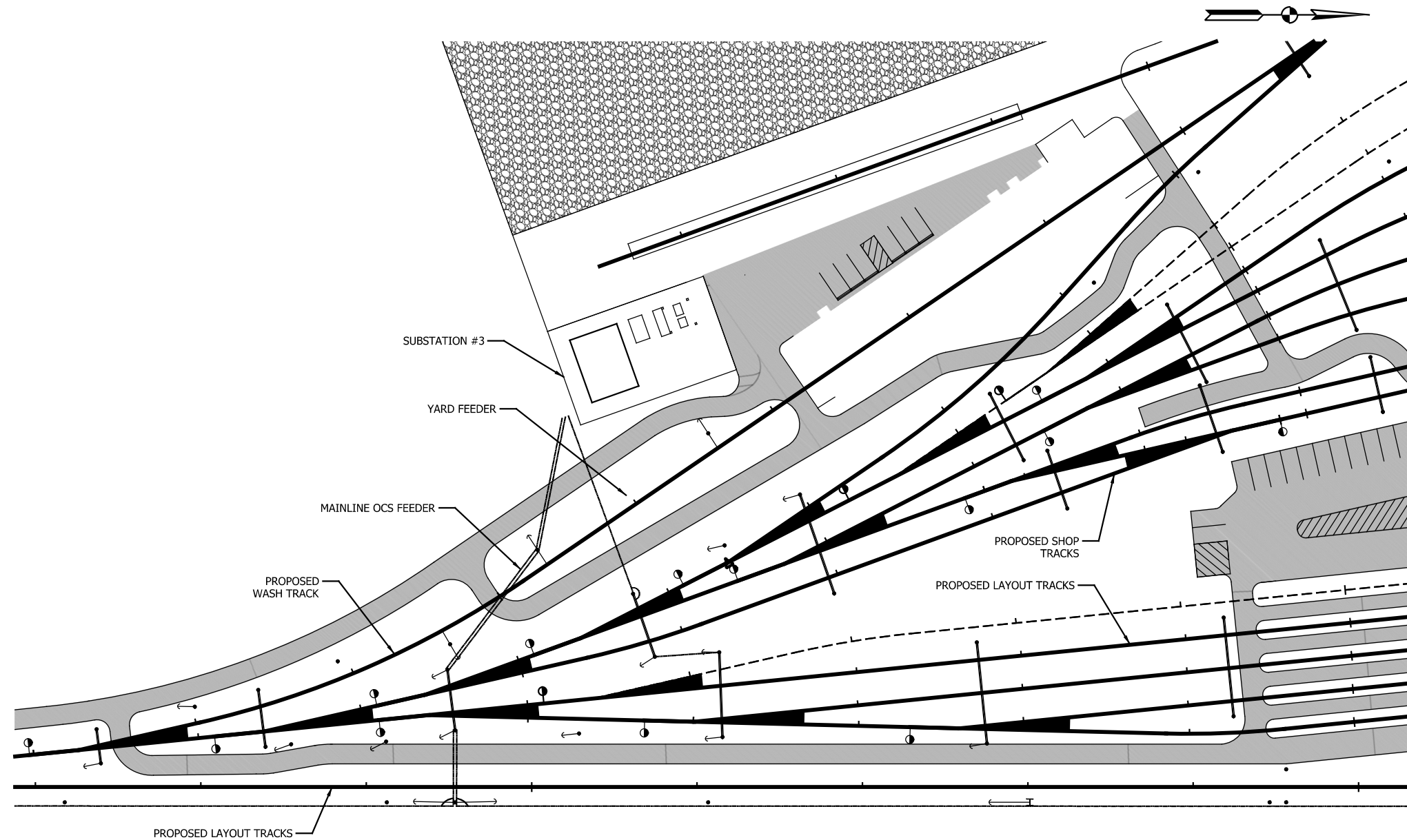
FILENAME SHT_WL_TP_SL_303
SCALE AS NOTED

SHEET
233 OF 248



NOTES

- KIRK KEY INTERLOCK WILL PREVENT OPENING OF (189N/REC1) NEGATIVE DISCONNECT UNLESS RECTIFIER BREAKER (172/M1) IS OPENED AND SHALL PREVENT CLOSE OF THE RECTIFIER BREAKER UNLESS THE (189N/REC1) NEGATIVE DISCONNECT IS CLOSED.
- OUTDOOR OCB IS THE PROPERTY OF THE UTILITY COMPANY, NIPSCO.
- NICTD ELECTRICAL INTERFACE TO THE NIPSCO EQUIPMENT IS VIA THE NIPSCO TERMINAL CABINET LOCATED IN NEW SUBSTATION.
- NICTD HAS THE ABILITY TO TRIP/CLOSE THE NIPSCO OCB LOCALLY.



SUBSTATION #3 AREA PLAN

SCALE: 1" = 40'

PLOT DATE: 7/19/2017 9:56:46 PM JKELLMA

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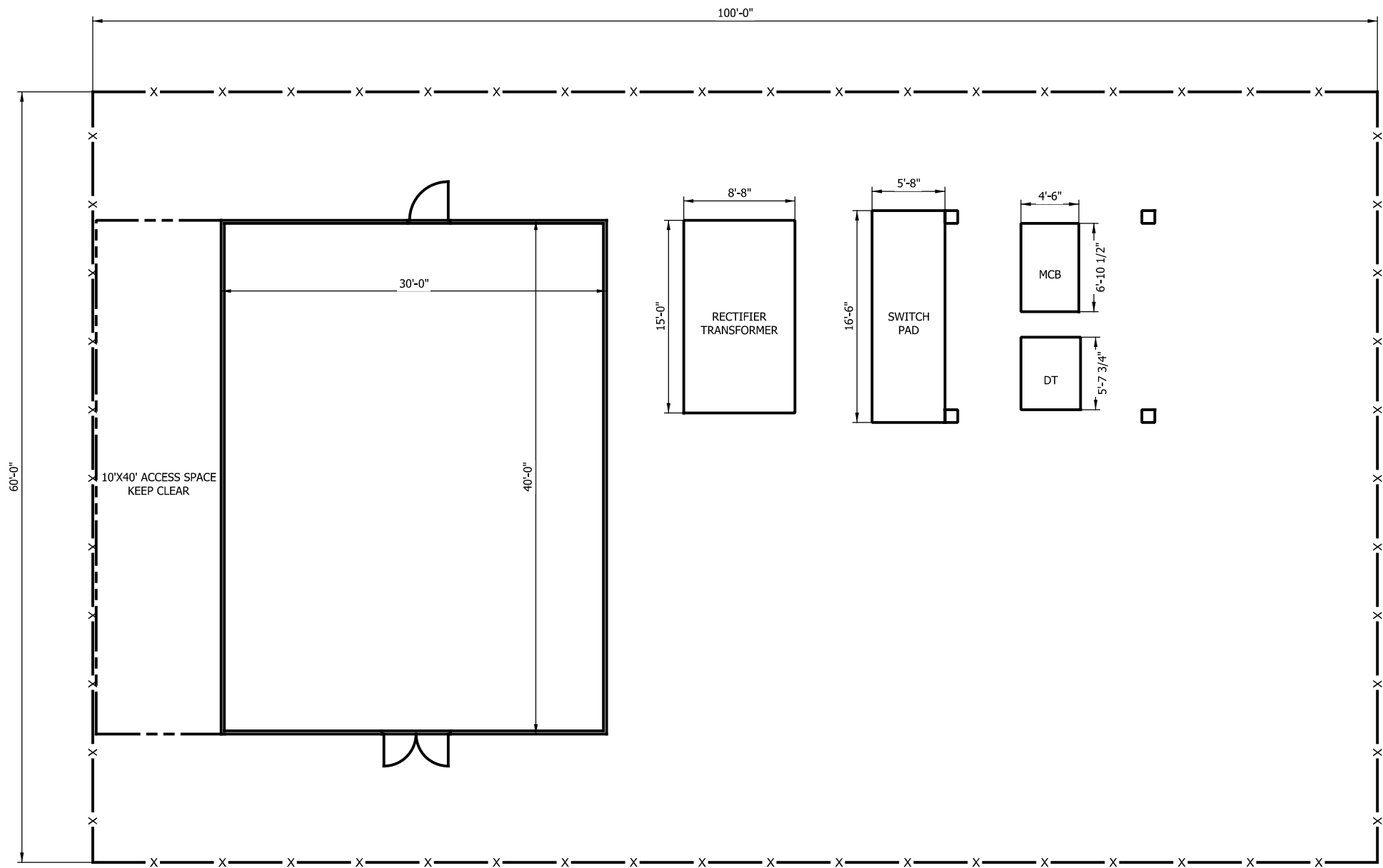
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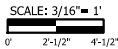
DESIGNED:	ED
DRAWN:	MJA
CHECKED:	JS
DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES TPPL3-1 OF TPPL3-3
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #3 AREA PLAN SYSTEM		
FILENAME	SHT_WL_TP_PL_310	SHEET
SCALE	AS NOTED	234 OF 248

- NOTES
- 1. INTERIOR EQUIPMENT NOT SHOWN ON THIS DRAWING.
 - 2. FOR SUBSTATION EQUIPMENT LAYOUT, SEE DRAWING TP_PL_3-2.



TPPS #3 YARD EQUIPMENT PLAN
Scale: 3/16" = 1'



PLOT DATE: 7/19/2017 9:56:58 PM JKJELLMA

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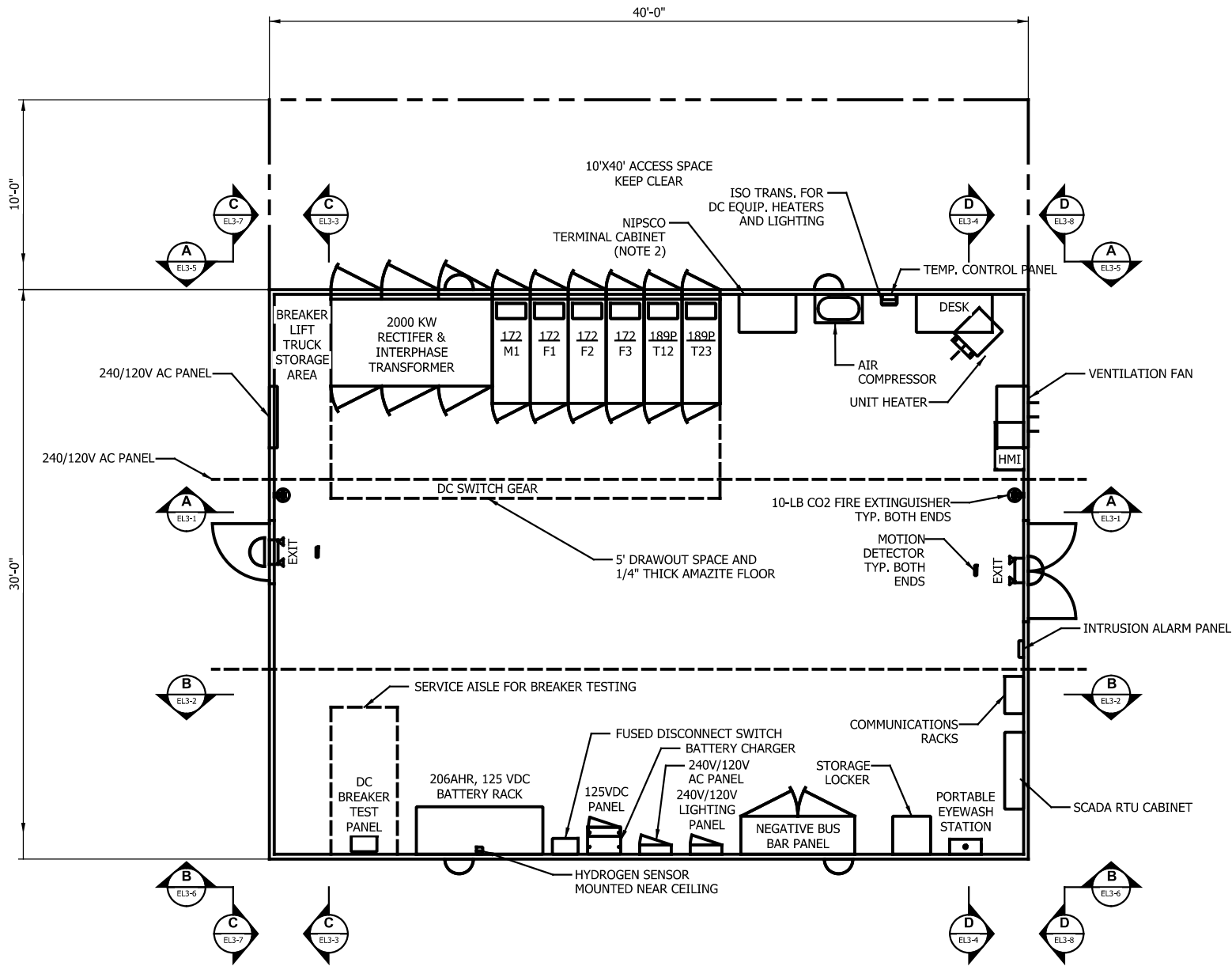
SERIES TPPL3-2 OF TPPL3-3

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 YARD EQUIPMENT PLAN
SYSTEM

FILENAME	SHT_WL_TP_PL_311	SHEET
SCALE	AS NOTED	235 OF 248

- NOTES
- INTERIOR EQUIPMENT SHOWN ON THIS DRAWING. (SUBSTATION BUILDING ROOF NOT SHOWN ON THIS DRAWING)
 - NICTD ELECTRICAL INTERFACE TO THE NIPSCO EQUIPMENT IS VIA THE NIPSCO PROVIDED TERMINAL CABINET.



TPPS #3 SUBSTATION EQUIPMENT LAYOUT
Scale: 1/4" = 1'

SCALE: 1/4" = 1'
0' 4' 8'

PLOT DATE: 7/19/2017 9:57:07 PM
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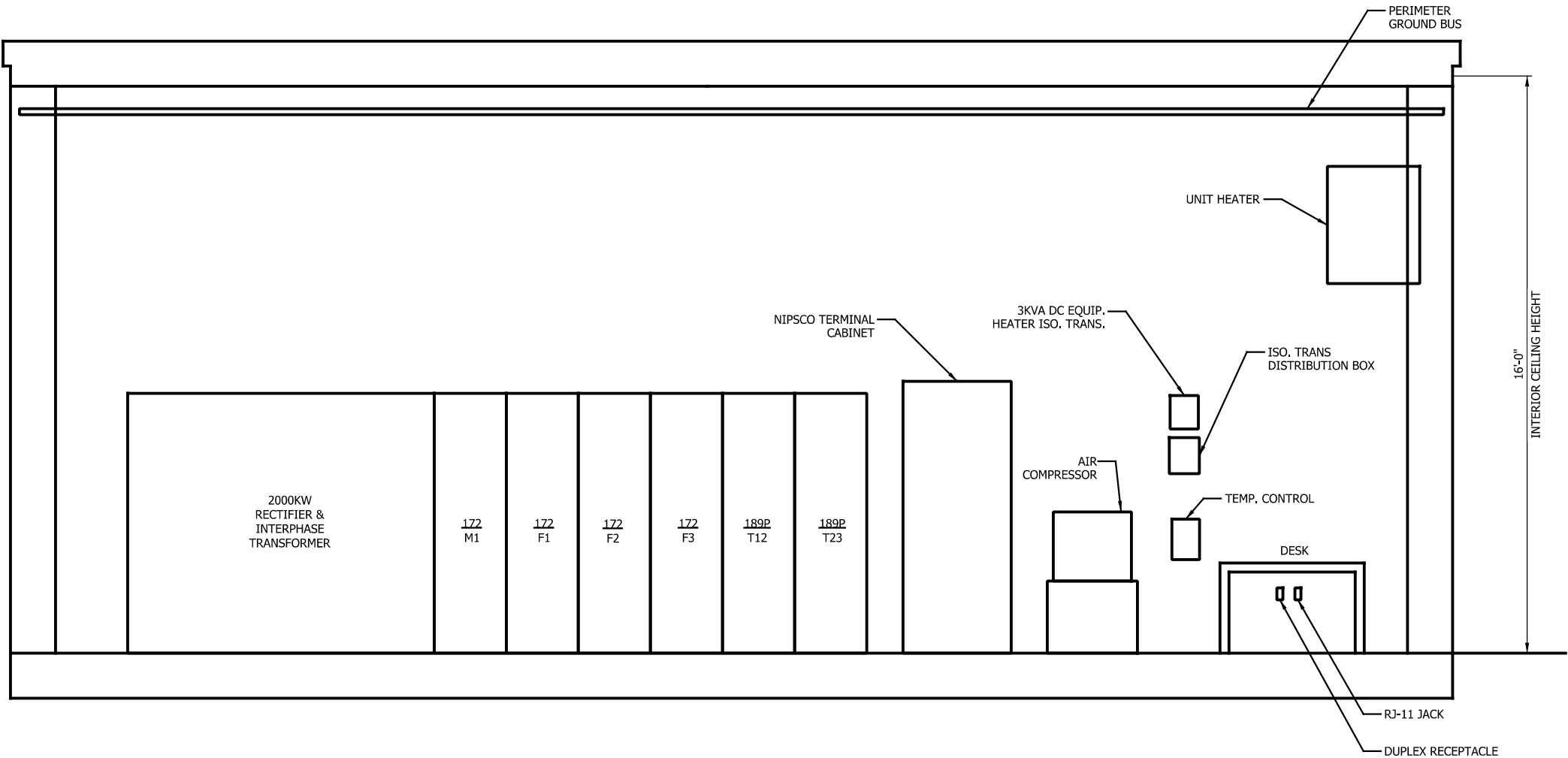
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NOT FOR CONSTRUCTION		SERIES TPPL3-3 OF TPPL3-3
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #3 SUBSTATION EQUIP LAYOUT SYSTEM		
FILENAME	SHT_WL_TP_PL_312	SHEET
SCALE	AS NOTED	236 OF 248



TPPS #3 SUBSTATION INTERIOR ELEVATION SECTION A-A
Scale: 1/2" = 1'

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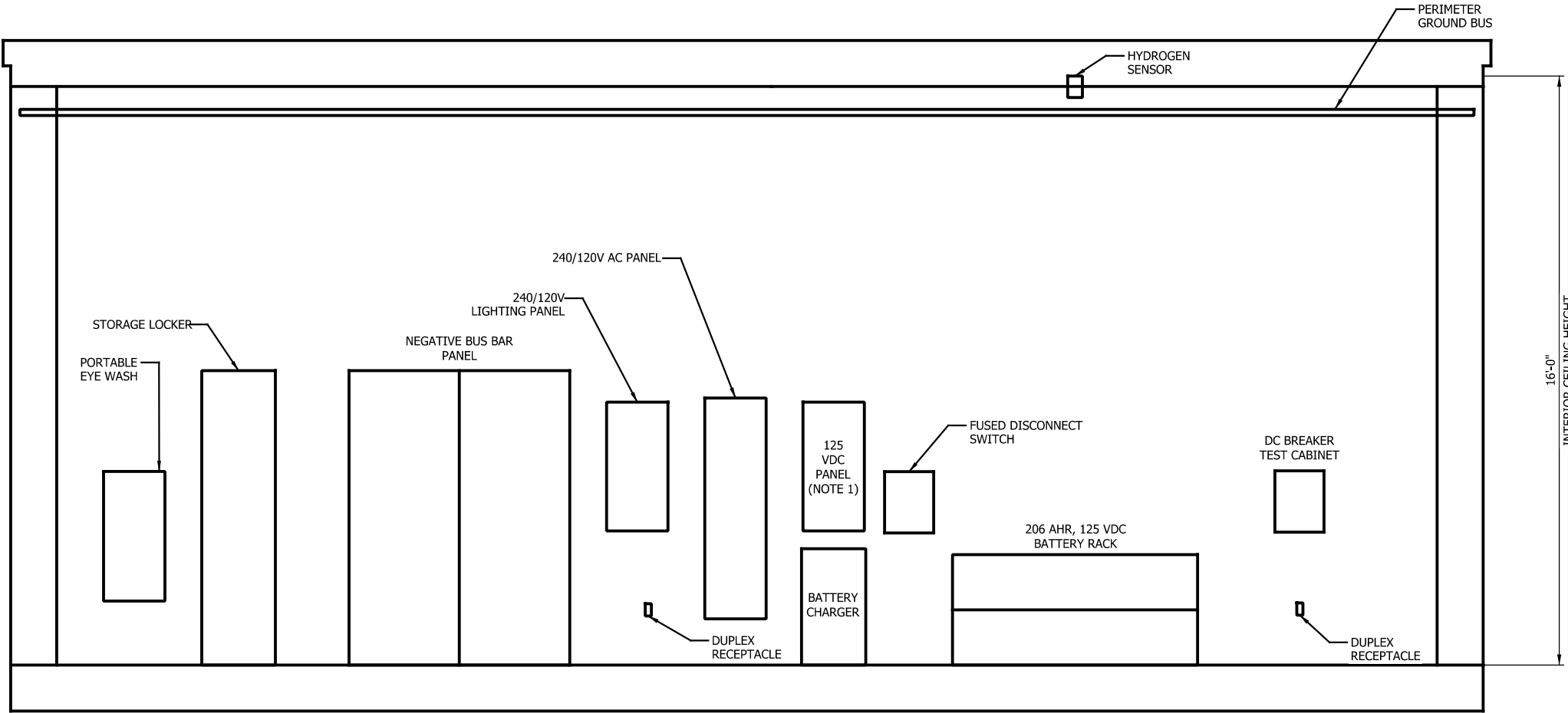
SERIES
TPEL3-1 OF TPEL3-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 INTERIOR ELEVATION (1 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_313	SHEET
SCALE	AS NOTED	237 OF 248

- NOTES
1. 125VDC PANEL SHALL BE FLUSHED WITH THE BATTERY CHARGER.



TPPS #3 SUBSTATION INTERIOR ELEVATION SECTION B-B
Scale: 1/2" = 1'

SCALE: 1/2" = 1'

PLOT DATE: 7/19/2017 9:57:23 PM JKJELMA



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ISSUE	DATE	DESCRIPTION



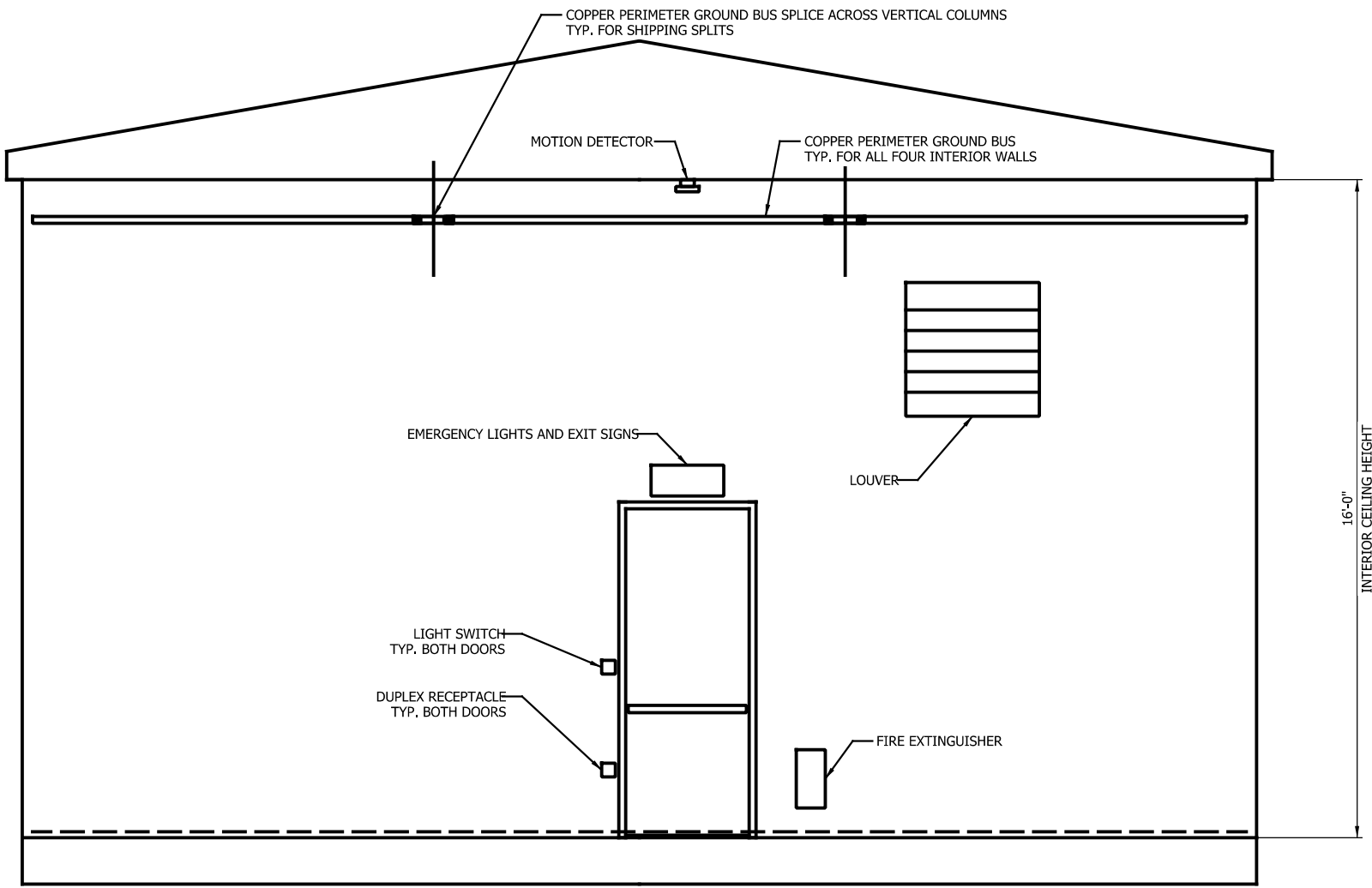
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DESIGNED:	SZM
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CHECKED:	JAS
DATE:	07/21/17

NOT FOR CONSTRUCTION		SERIES TPEL3-2 OF TPEL3-8
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
TPSS #3 INTERIOR ELEVATION (2 OF 4) SYSTEM		
FILENAME	SHT_WL_TP_EL_314	SHEET
SCALE	AS NOTED	238 OF 248



TPPS #3 SUBSTATION INTERIOR ELEVATION SECTION C-C
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

PLOT DATE: 7/19/2017 9:57:31 PM
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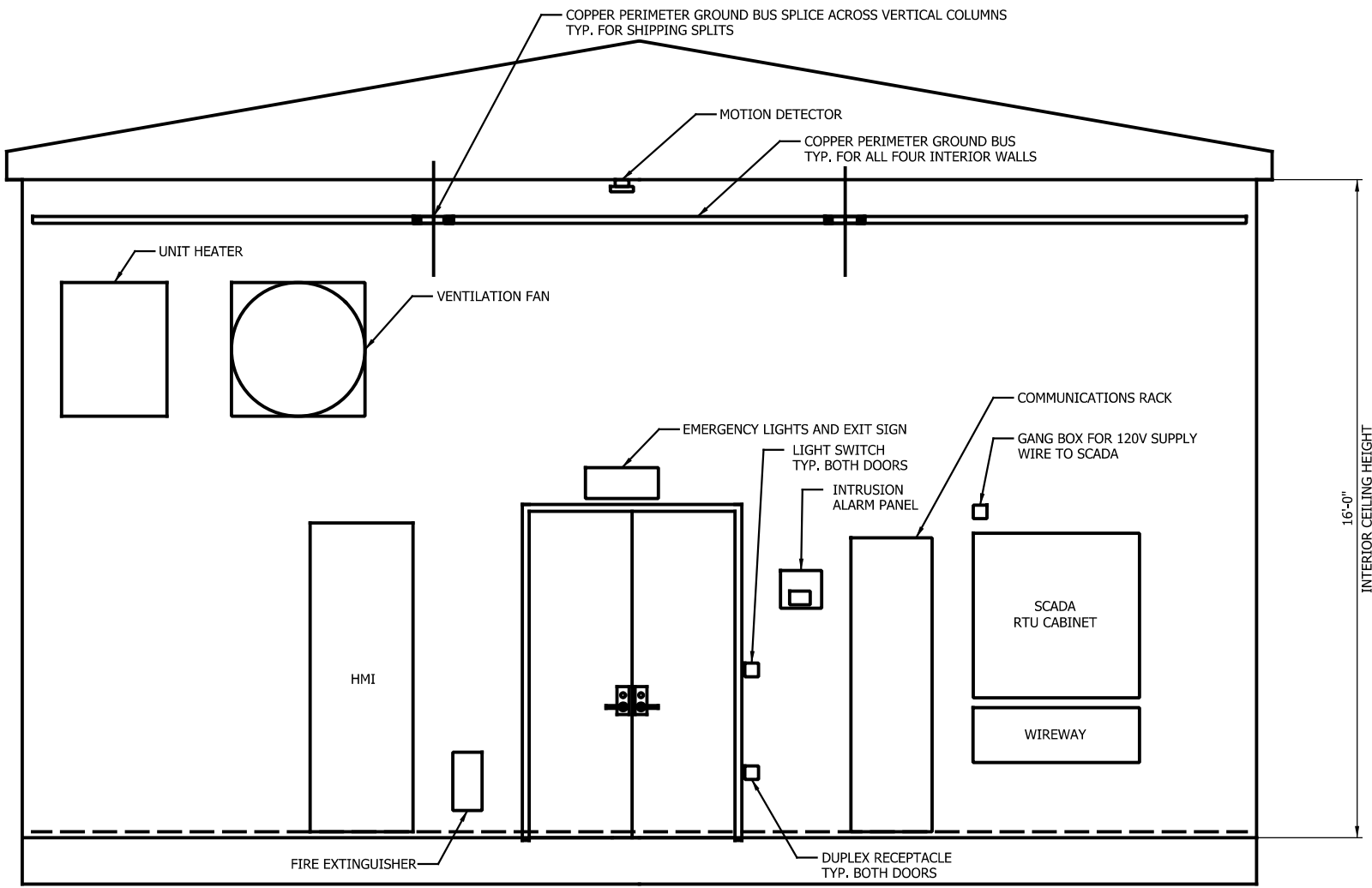
NOT FOR CONSTRUCTION

SERIES
TPEL3-3 OF TPEL3-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 INTERIOR ELEVATION (3 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_315	SHEET
SCALE	AS NOTED	239 OF 248



TPSS #3 SUBSTATION INTERIOR ELEVATION SECTION D-D
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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SERIES
TPEL3-4 OF TPEL3-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 INTERIOR ELEVATION (4 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_316	SHEET
SCALE	AS NOTED	240 OF 248

PLOT DATE: 7/19/2017 9:57:49 PM JKJELIMA

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CHECKED:	JAS
DATE:	07/21/17

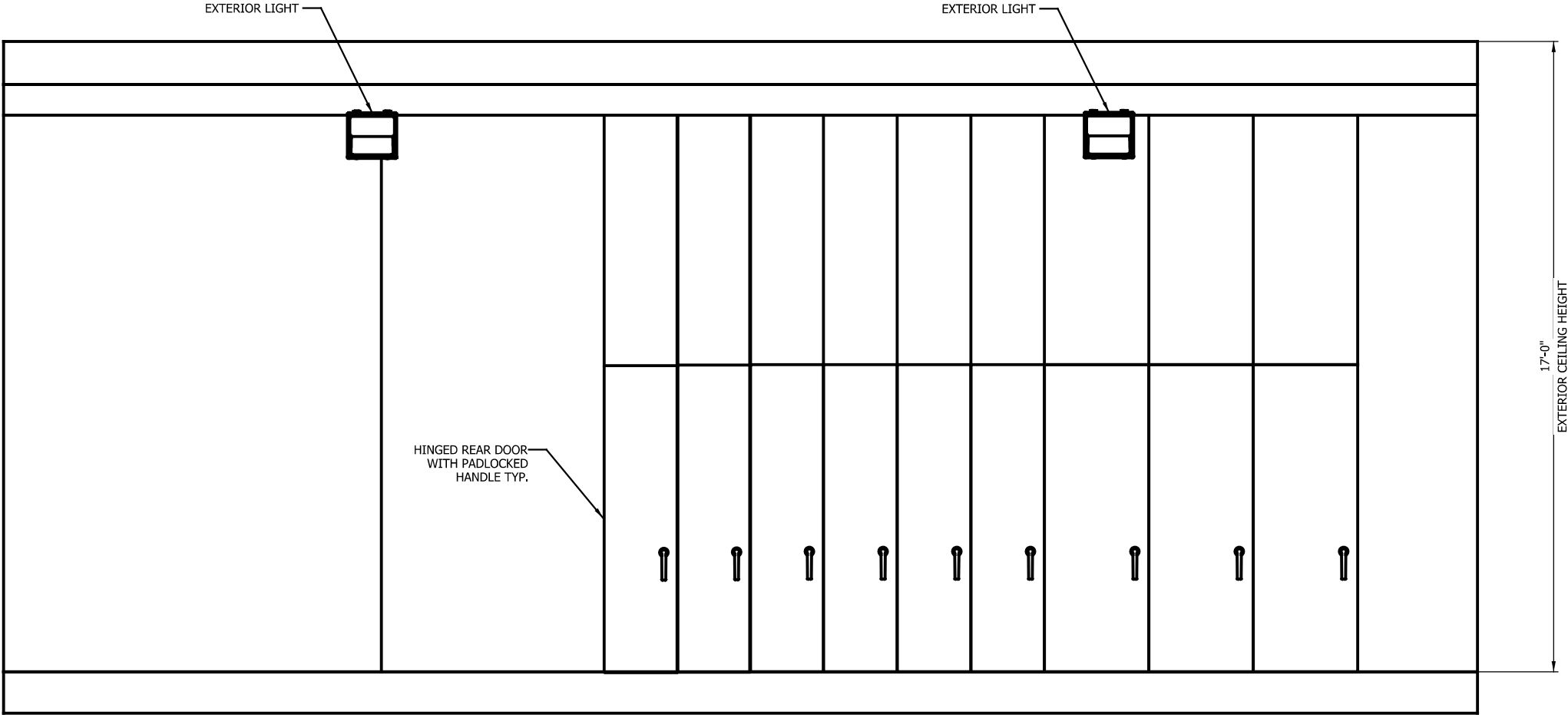
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SERIES
TPEL3-5 OF TPEL3-8

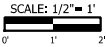
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 EXTERIOR ELEVATION (1 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_317	SHEET
SCALE	AS NOTED	241 OF 248



TPPS #3 SUBSTATION EXTERIOR ELEVATION SECTION A-A
Scale: 1/2" = 1'



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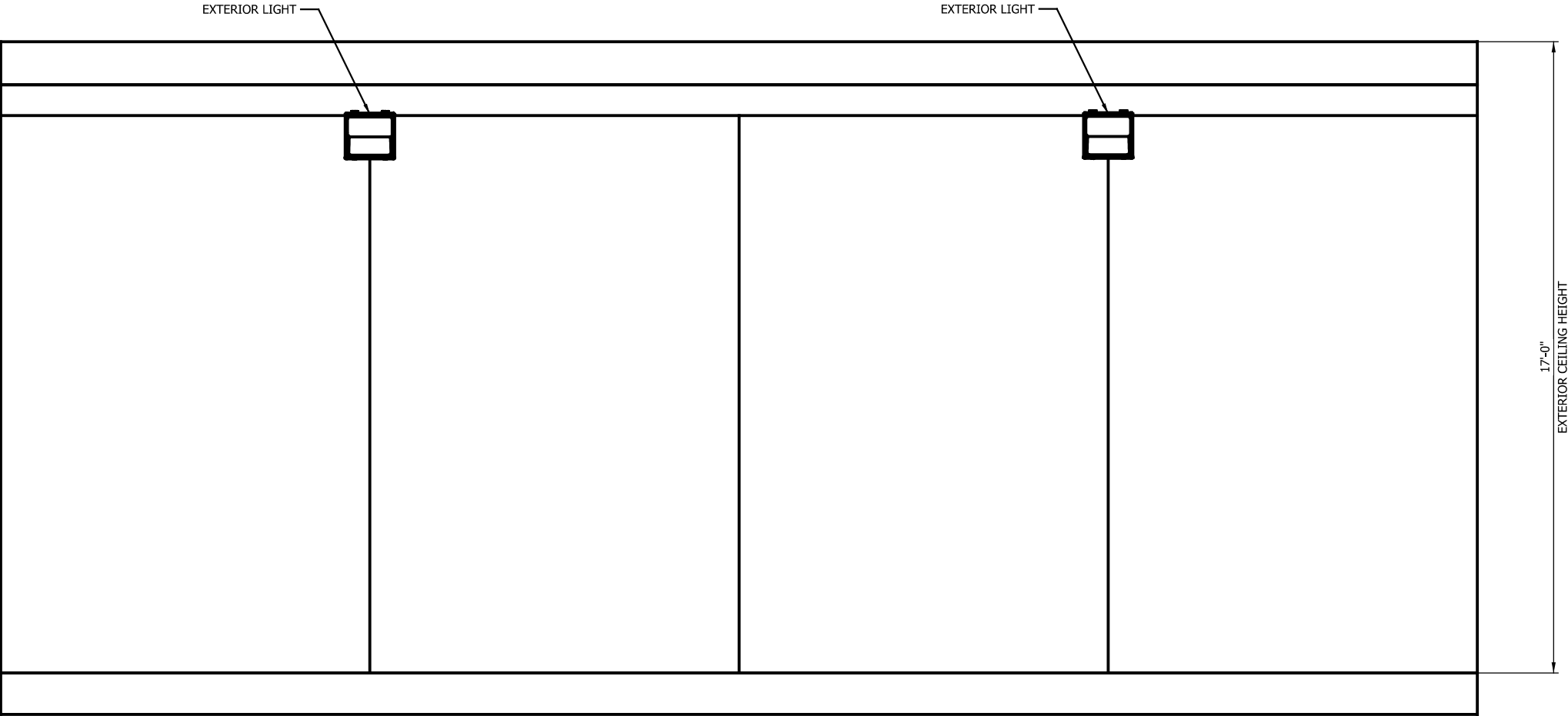
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SERIES
TPEL3-6 OF TPEL3-8

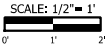
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SINGLE TRACK

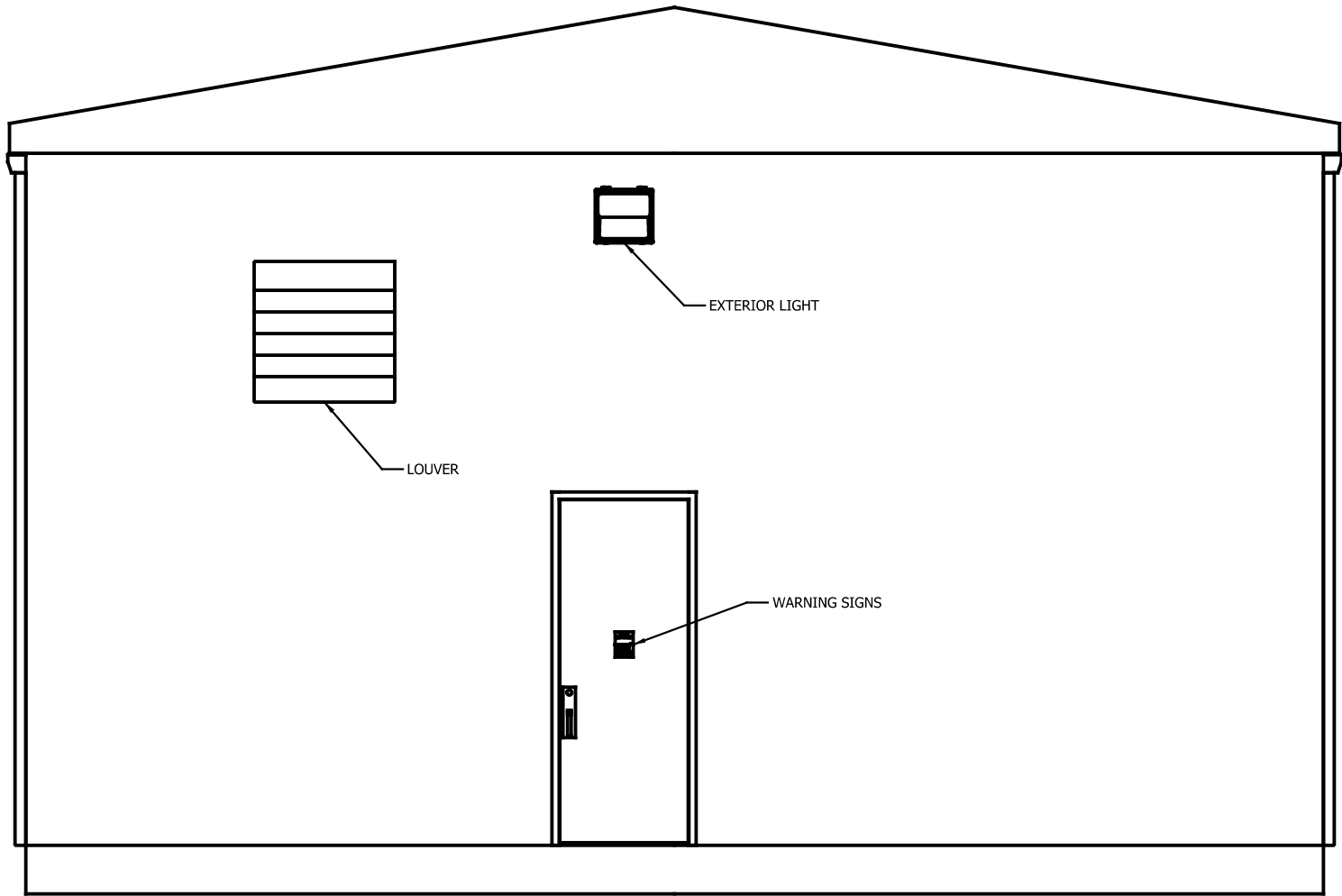
TPSS #3 EXTERIOR ELEVATION (2 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_318	SHEET
SCALE	AS NOTED	242 OF 248



TPPS #3 SUBSTATION EXTERIOR ELEVATION SECTION B-B
Scale: 1/2" = 1'





TPPS #3 SUBSTATION EXTERIOR ELEVATION SECTION C-C
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

PLOT DATE: 7/19/2017 9:58:08 PM JKJELMA

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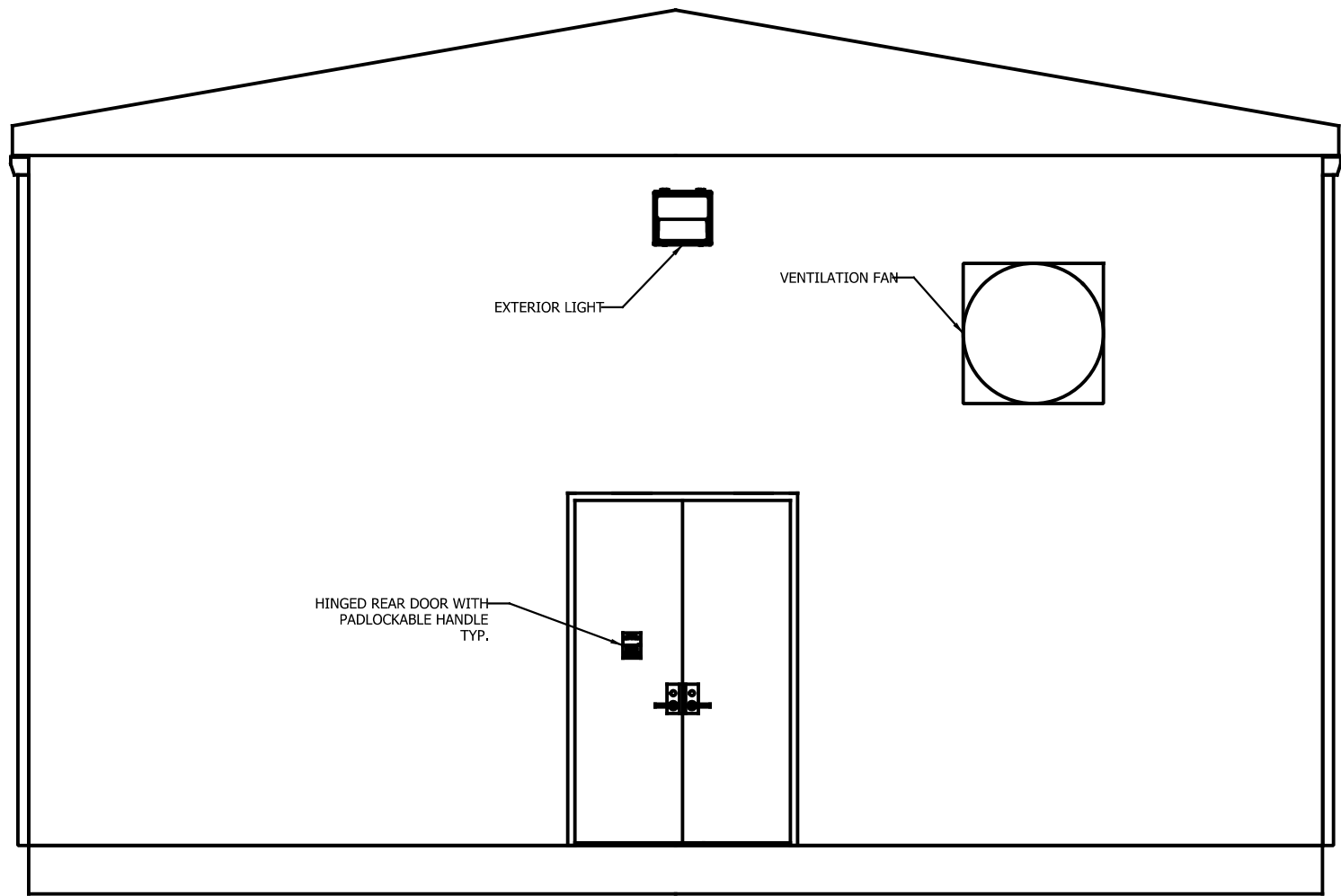
NOT FOR CONSTRUCTION

SERIES
TPEL3-7 OF TPEL3-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 EXTERIOR ELEVATION (3 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_319	SHEET
SCALE	AS NOTED	243 OF 248



TPPS #3 SUBSTATION EXTERIOR ELEVATION SECTION D-D
Scale: 1/2" = 1'

SCALE: 1/2" = 1'
0' 1' 2'

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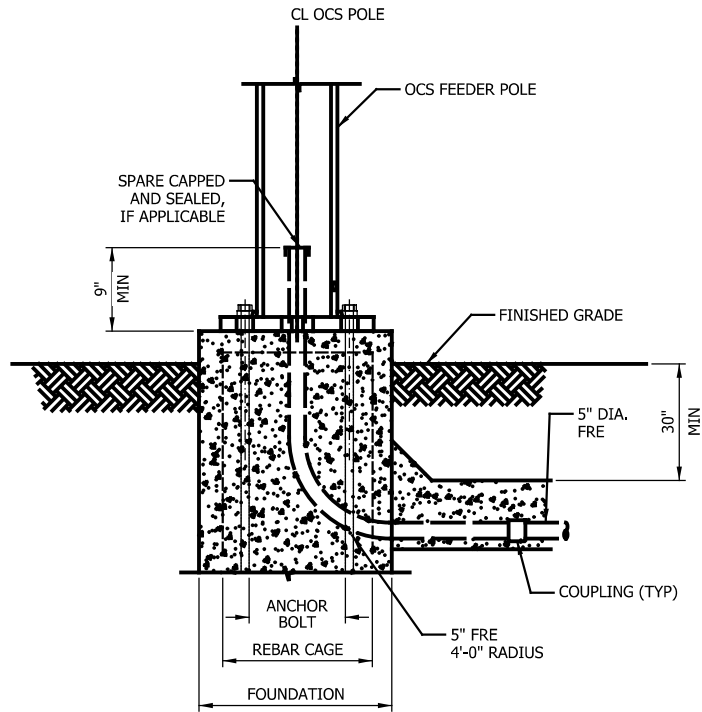
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SERIES
TPEL3-8 OF TPEL3-8

NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

TPSS #3 EXTERIOR ELEVATION (4 OF 4)
SYSTEM

FILENAME	SHT_WL_TP_EL_320	SHEET
SCALE	AS NOTED	244 OF 248



TYPICAL OCS POLE CONDUIT ROUTING DETAIL
Scale: NTS

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DATE:	07/21/17

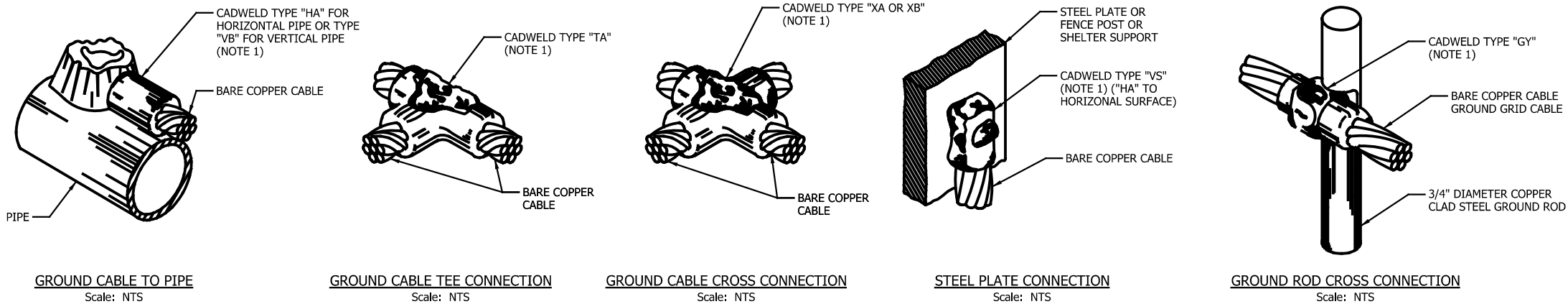
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SERIES
TPDT-1 OF TPDT-3

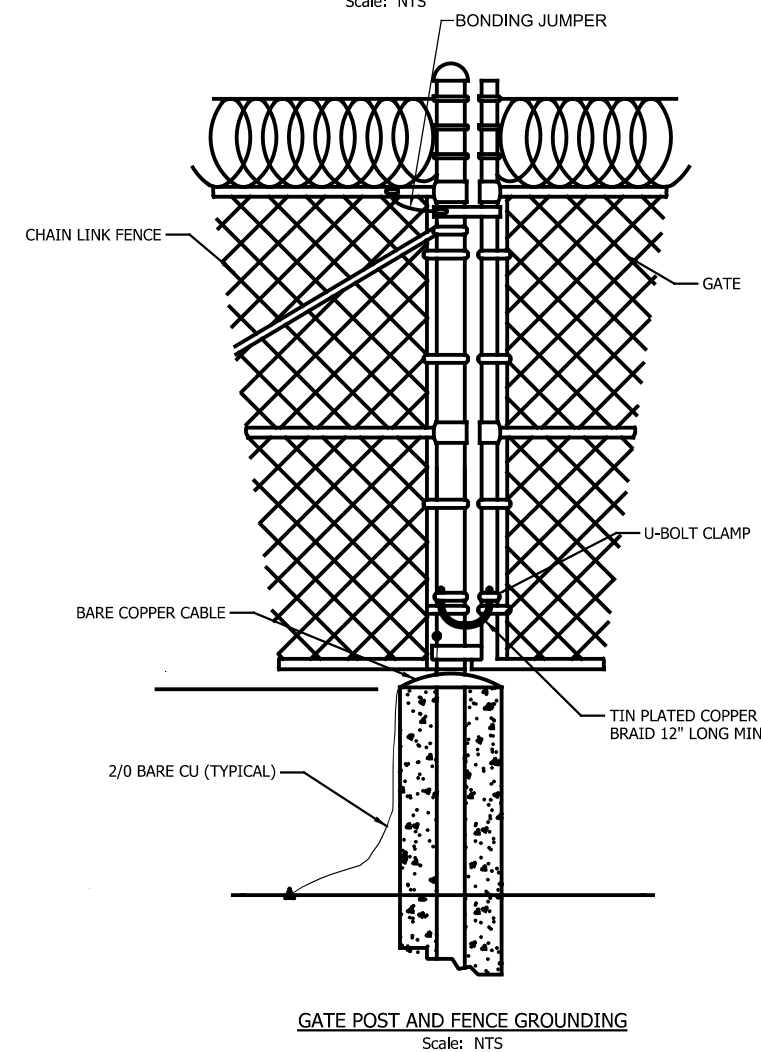
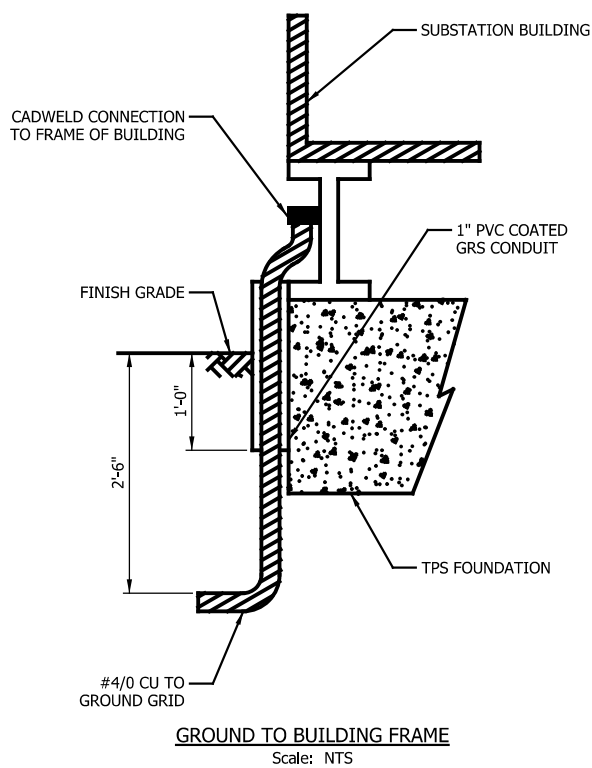
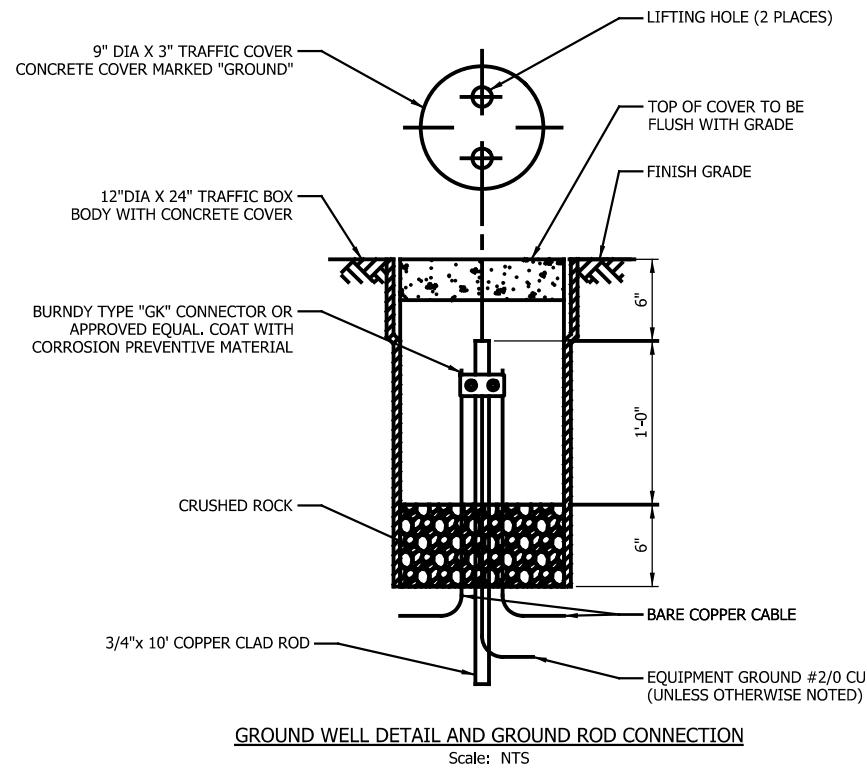
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18
SINGLE TRACK

OCS POLE CONDUIT ROUTING DETAILS
SYSTEM

FILENAME	SHT_WL_TP_DT_401	SHEET
SCALE	AS NOTED	245 OF 248



- NOTES**
- CADWELD TYPE LISTED FOR REFERENCE ONLY AND DOES NOT PRECLUDE ANY OTHER APPROVED MANUFACTURER.
 - UNLESS OTHERWISE NOTED, ALL GROUND RODS SHALL BE 3/4" DIAMETER COPPER-CLAD STEEL.
 - COAT CONNECTION USING A DIELECTRIC BITUMASTIC COATING SO THAT THE ENTIRE CONNECTION IS COMPLETELY ENCAPSULATED. COATING SHALL BE TAPECOAT TC MASTIC BY ROYSTON OR APPROVED EQUAL.
 - A #2/0 AWG COPPER CABLE SHALL BE CONNECTED FROM THE GROUND GRID TO EVERY OTHER FENCE POSTS, EVERY GATE POST AND EVERY CORNER POST.
 - DRILL AND TAP FOR 2 HOLE NEMA LUGS ARE REQUIRED.
 - PACK THE CONDUIT OPENING WITH DUCT-SEAL MATERIAL TO PREVENT WATER STAGNATING IN THE CONDUIT.



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HDR
HDR Engineering, Inc.
8550 W Bryn Mawr Ave., Suite 900
Chicago, IL 60631
www.hdrinc.com

Burns
BURNS ENGINEERING, INC. | 215 979-7700
TWO COMMERCE SQUARE, 2001 MARKET ST. SUITE 600
PHILADELPHIA, PA 19103

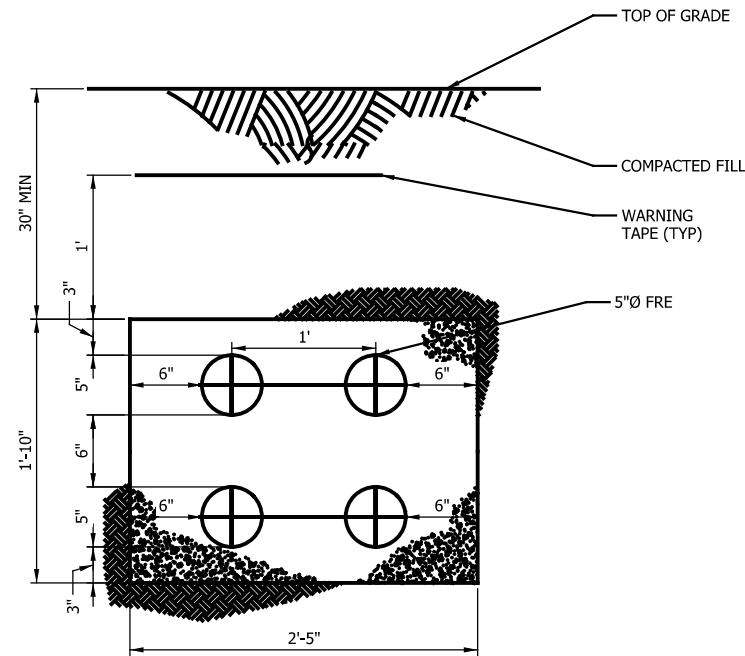
ISSUE	DATE	DESCRIPTION

NICTD
NORTHERN INDIANA COMMUTER
TRANSPORTATION DISTRICT
33 East Highway 12
Chesterton, Indiana 46304

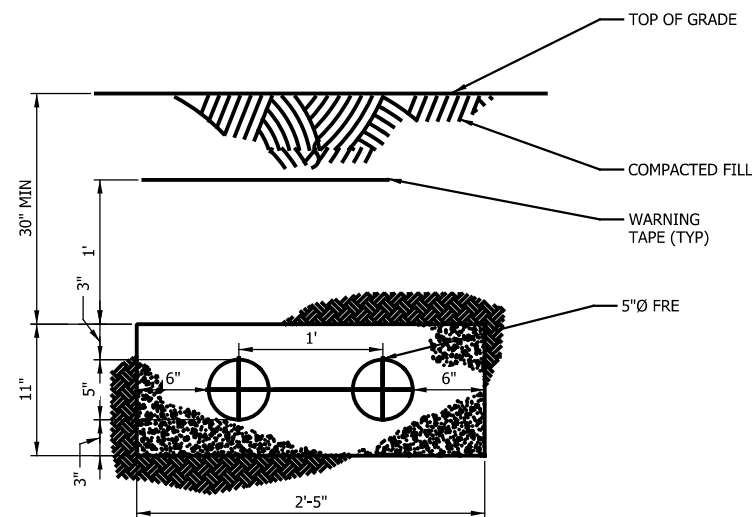
WEST LAKE
CORRIDOR
DYER TO HAMMOND, INDIANA

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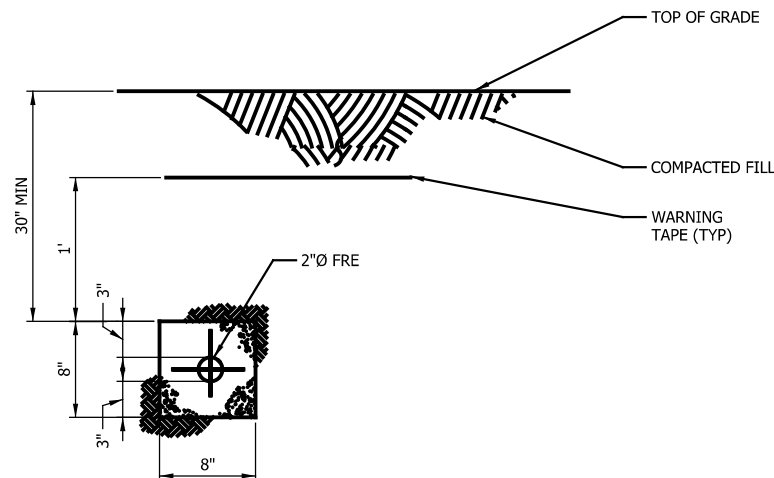
NOT FOR CONSTRUCTION		SERIES TPDT-2 OF TPDT-3
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
SUBSTATION GROUNDING DETAILS SYSTEM		
FILENAME	SHT_WL_TP_DT_402	SHEET
SCALE	AS NOTED	246 OF 248



SECTION A-A
Scale: NTS



SECTION B-B
Scale: NTS



NOTES

1. WHERE CROSSING UNDER TRACK, TOP OF DUCTBANKS TO BE 4'-0" MIN BELOW TOP OF HIGH RAIL UNLESS OTHERWISE INDICATED.
2. TRANSITION FROM PULL BOX ENTRANCE TO NORMAL DEPTH AS SHOWN ON DUCTBANK SECTIONS TO BE MADE WITH LONG CONDUIT SWEEPS.
3. MINIMUM DIMENSIONS DO NOT APPLY AT CROSSINGS UNDER UTILITY PIPES.
4. ALL CONDUITS FRE UNLESS NOTED OTHERWISE.
5. INSTALL YELLOW WARNING TAPE 12" BELOW TOP OF FINISHED GRADE CONTINUOUS FOR ENTIRE DUCT LINE.
6. ALL UNDERGROUND TRACTION POWER CONDUITS TO BE ENCASED IN RED CONCRETE.
7. DUCT BANKS TO BE CONCRETE ENCASED, STEEL REINFORCED. FOR CLARITY REINFORCING NOT SHOWN FOR ALL SECTIONS. REFERENCE FOR TYPICAL INSTALLATION - PROVIDE #4 AT 6" CENTERS TOP, BOTTOM AND SIDES WITH #3 TIES AT 12" CENTERS FOR ALL SECTIONS.
8. CONDUIT BEND RADIUS SHALL BE MINIMUM 4' FOR 5" DIAMETER CONDUITS, 2' FOR 2" DIAMETER CONDUITS.

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		TPDT-3 OF TPDT-3
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK		
DUCT BANK CONDUIT SECTIONS SYSTEM		
FILENAME	SHT_WL_TP_DT_403	SHEET
SCALE	AS NOTED	247 OF 248

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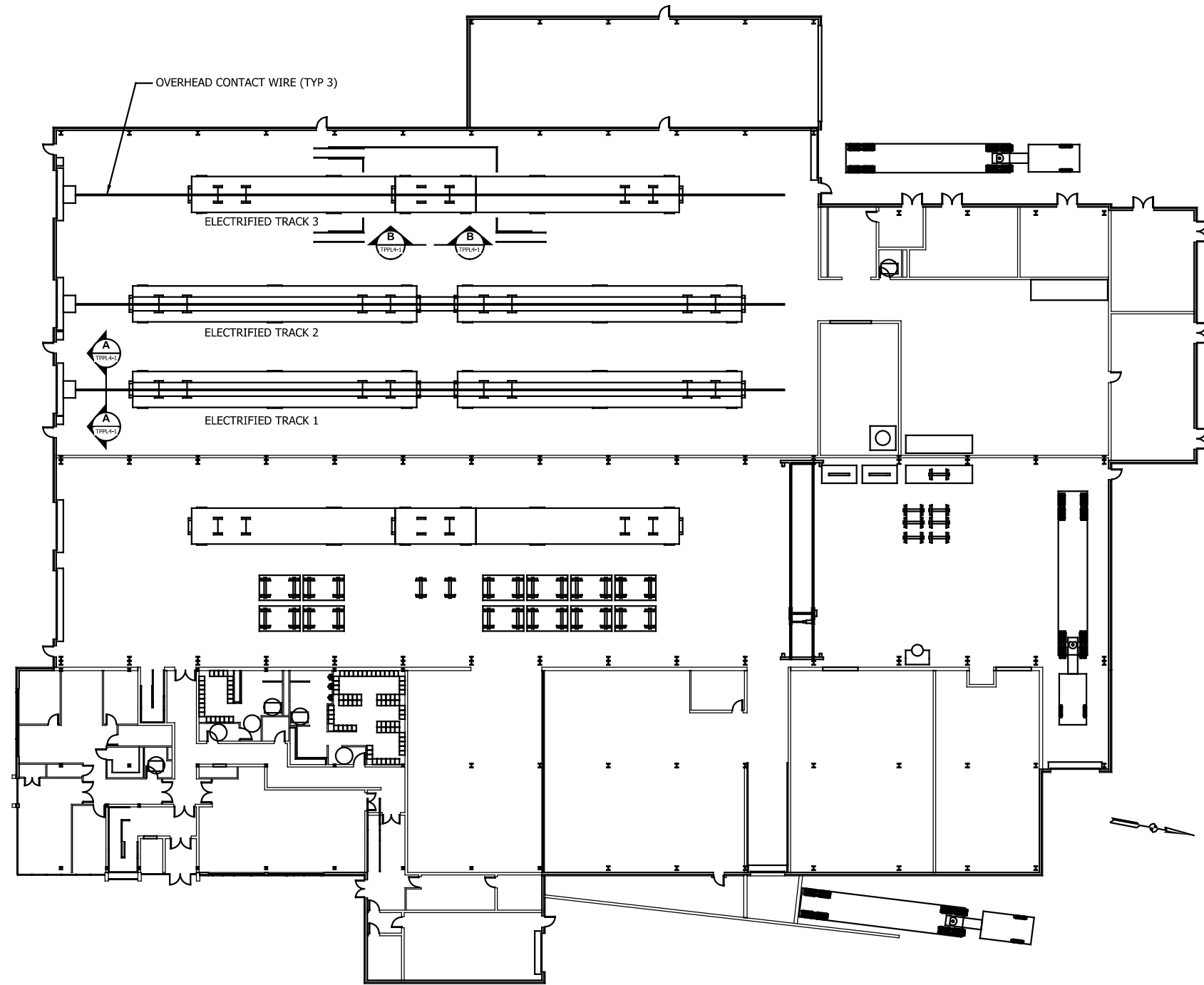
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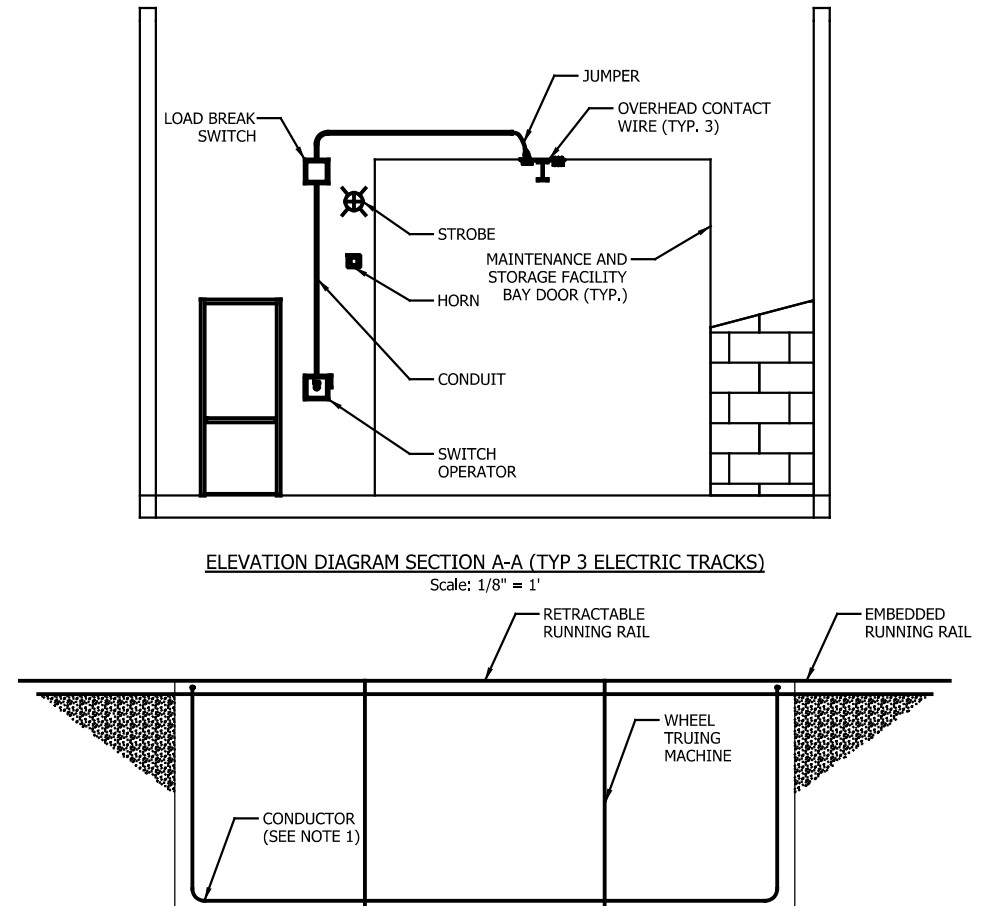
DYER TO HAMMOND, INDIANA

DESIGNED:	SZM
DRAWN:	SZM
CHECKED:	JAS
DATE:	07/21/17

NOT FOR CONSTRUCTION			SERIES
NICTD - WEST LAKE CORRIDOR - MP WL 61.38 TO WL 69.18 SINGLE TRACK			TPPL4-1 OF TPPL4-1
M&SF AREA PLAN AND DETAILS SYSTEM			
FILENAME	SHT_WL_TP_PL_451	SHEET	
SCALE	AS NOTED	248 OF 248	

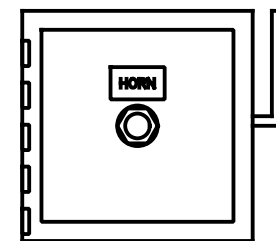


MAINTENANCE AND STORAGE STORAGE FACILITY AREA
Scale: 1" = 20'

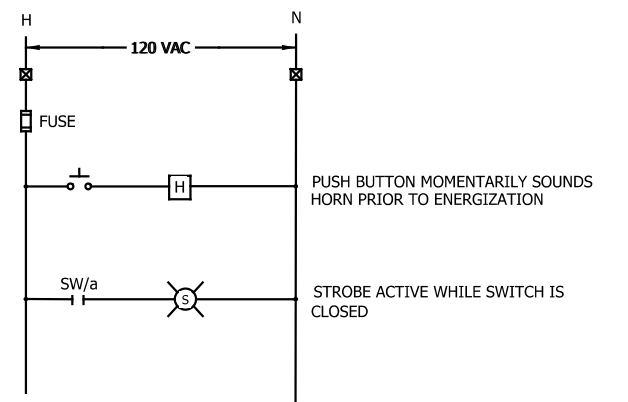


ELEVATION DIAGRAM SECTION A-A (TYP 3 ELECTRIC TRACKS)
Scale: 1/8" = 1'

WHEEL TRUING MACHINE SECTION B-B
Scale: 1/8" = 1'



SWITCH OPERATOR FRONT ELEVATION
Scale: 10:1



CONTROL DIAGRAM
Scale: NTS